OCT. 28 1960

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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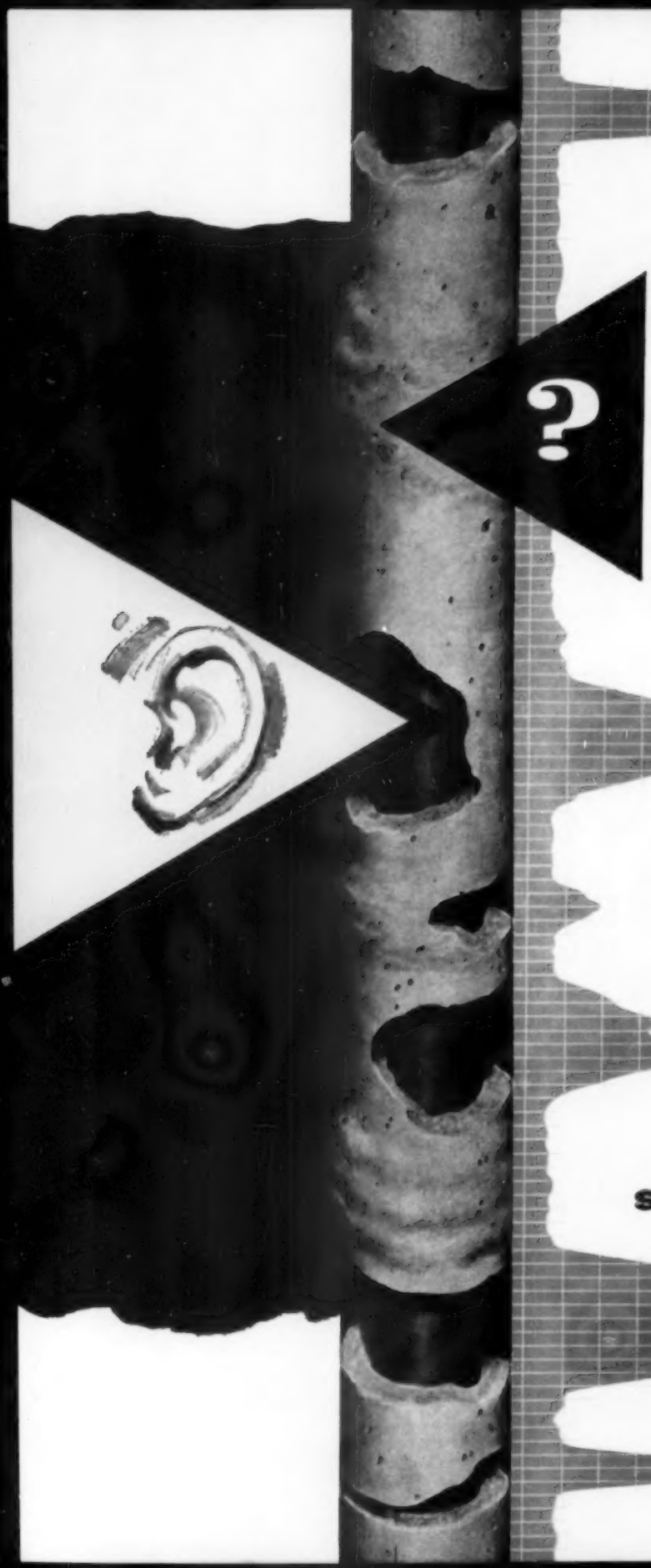

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THE EYES OF THE OIL INDUSTRY

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Views That Make News

Dear Sir:

Your facts are right, but we disagree with the conclusions reached in "Significant Sidelights" [PW—Oct.7'60,p 18], because you considered only research octane numbers. There have been many articles published pointing up the need for using both motor and research octane numbers in assessing the octane quality received by the motorist.

During the 20-month period used in your story, motor octane number for premium grade advanced 1.0 unit while regular grade advanced only 0.5 unit. Increases in motor octane number contribute significantly to road performance.

Translating research and motor gains into road octane numbers, using the simplest formula, (RON+MON) ÷2, shows a premium gain of 0.6 and a regular gain of 0.7 octane number during the past 20 months. Therefore, the quality improvement is nearly the same for both grades and more sophisticated road octane formulas may show no difference.

HUDSON W. KELLOGG
Manager, Gasoline Testing Division
Ethyl Corp.

"We have gone through severe and costly lessons on the economic pitfalls involved in over-importing, over-production, over-refining, over-expansion, over-drilling, and the over-ambitious attitude of some companies that seem to shout, 'demand is going up 3% this year—but we shoot for ten.'

"There has been an apparent and healthy awakening among oil men to their problems, and a determination within the industry to correct uneconomic conditions of its own making."

—ALVIN C. HOPE
President
Independent Petroleum Assn. of America

"Critics of percentage depletion seem never to grasp fully the vital fact that the oil producer's capital must continuously revolve in the highly unpredictable business of finding oil—that he cannot be reasonably certain that his capital can be replaced at a price or cost comparable to the value of the capital depleted, as can the merchant who replenishes his stock of goods or the manufacturer who replaces his depreciated machinery . . .

"If such understanding could be grasped by the critics, they would then realize what the oil producer means when he says that his capital would be largely taxed away if percentage depletion and capital gains should be removed."

—ARTHUR A. SMITH
Vice-president and economist
First National Bank in Dallas

"While we are all aware that cost reduction and increased sales are important to the company's profit, their relative effect on profits may not be fully appreciated. For instance, based on the average return on total sales in the first half of this year, it would be necessary to make additional sales of almost $17,000 to produce a profit increase equal to a cost reduction of $1,000."

—REESE H. TAYLOR
Chairman
Union Oil Co. of California

"As we in the U.S. and in the Western—and free—world meet the challenges which will come our way during the next decade, we cannot risk the dangers of a foundation built on outmoded or uneconomic forms of energy. Rather, we must constantly scrutinize our energy supply to insure that our own lusty economy is maintaining maximum productivity by the use of the most efficient, convenient, and economic energy sources. Freedom of choice of energy source has been the key to our own economic success, and holds the same opportunity for those nations who are now beginning their modern productive lives."

—GEORGE F. GETTY II
President
Tidewater Oil Co.

"In these challenging times, oil companies and governments throughout the world are experimenting in the search for wise policies to foster more economic stability. The path toward the right economic solution is not readily apparent, but I am confident that a sound answer will evolve from the combined interest and intelligence of the Free World's oil men and government officials."

—L. F. MCCOLLUM
President
Continental Oil Co.

PETROLEUM WEEK *will publish reader comments each week. Address letters to LeRoy Menzing, Editor,* PETROLEUM WEEK, *330 W. 42nd St., New York 36, N. Y.*

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NATIONAL PETROLEUM NEWS PLATT'S OILGRAM NEWS AND PRICE SERVICES

PETROLEUM WEEK **OCTOBER 28, 1960**
Vol. 11, No. 17

Published weekly by McGraw-Hill Publishing Co., Inc. James H. McGraw (1860-1948), founder. Publication office: 871 N. Franklin St., Chicago 10, Ill. See panel below for directions regarding subscriptions or change of address.

Executive, Editorial, Circulation and Advertising offices: 330 W. 42nd St., New York 36, N. Y. Officers of the Publications Division: Nelson L. Bond, President; Shelton Fisher, Wallace F. Traendly, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. Officers of the Corporation: Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary.

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Subscriptions: Address subscription correspondence and change of address to Fulfillment Manager, Petroleum Week, 330 W. 42nd Street, New York 36, N. Y. On address changes please give old and new addresses and zone numbers, if any, and enclose an address label from a recent issue if possible. Please allow one month for change to become effective.

Postmaster: Please send form 3579 to Petroleum Week, 330 W. 42nd St., New York 36, N. Y.

INSIDE Slant

THINKING IS THE NEED

Better thinking in the petroleum industry is the popular theme of speakers thus far on the fall convention trail.

A good summation of this need was made by W. J. Goldston, Houston, president of the Mid-Continent Oil & Gas Assn., in a recent speech before the Texas Mid-Continent.

"With good thoughts," said Goldston, "our problems could be solved within a reasonable time.

"But as long as we continue to operate as we do, we will have problems."

From factual information at hand, Goldston drew the conclusion that the industry is competing with itself. These figures show that natural gas accounted for more than half of the total growth in hydrocarbon requirements during the past ten years.

It was his opinion that the consumer of gasoline is being forced to subsidize the consumer of gas, that natural gas is killing off its sponsor—crude.

It is on this point, he said, that better thinking is needed to keep the competition between gas and oil from becoming even more intense.

LeRoy Menzing

Good Wells Make Good News

Treatments that Improved Secondary Recovery and Water Disposal Wells

October 28, 1960

Every well on your lease represents an investment on which you hope to earn a profit, whether it's a disposal, injection or a producing well. If its performance can be improved at a reasonable cost, your net profits should also improve. Dowell treatments have made all types of wells more valuable to their operators. Here are four recent examples of how stimulation treatments by Dowell improved two waterflood producing wells and two water disposal wells.

- **Daviess County, Kentucky** (Waterflood producing well) This old well had been abandoned as depleted several years ago. Pay was the Cypress sand between 1365 and 1385 feet. When pool was converted to waterflood, well was cleaned and pipe was set for open-hole completion. Before treatment well made only a show of oil. Dowell treated, using Abrasijet* — abrasive jetting service, Waterfrac and temporary plugging material. Formation was jetted for 20 minutes using 5000 pounds sand, then fractured using water with FLA* and 10,000 pounds sand. Two batches of temporary plugging material were used during the treatment to obtain multiple fracturing. 30 days after treatment, production had stabilized at 35 bopd.

- **Montgomery County, Southeast Texas** (Salt water disposal well) This well had been completed into a Miocene sand between 3357 and 3368 feet. Before treatment, it would take no water (at pressures as high as 800 psi) so the operator ordered a 1000-gallon treatment using regular acid. There was no improvement. Dowell was consulted and recommended treating with 1000 gallons Super Mud Acid. Since the sand was believed to be oil-wet, an extra amount of surfactant was used. During treatment, the well went on vacuum. At last report, it was accepting all available water.

- **Lea County, New Mexico** (Water disposal well) This well had been completed open hole into the Devonian between 12,207 and 12,463 feet. Before treatment, it was receiving 28 bwph at 4500 psi. Dowell acidized, injecting 10,000 gallons regular acid down 2⅞" drill pipe at 7.5 bpm. After treatment, well was taking 660 bwph on vacuum.

- **Osage County, Oklahoma** (Waterflood producing well) Before treatment, this well was producing 1 bopd. Dowell fractured using Waterfrac. 8000 gallons gelled water and 16,000 pounds 20-40 mesh sand were injected. Here is production record: Immediately after treatment, 153 bopd; at 30 days, 168 bopd; after 90 days, 342 bopd; at six months, 340 bopd. After 10 months, production was still 84 bopd.

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60-Second Summary / WHAT'S HAPPENING IN OIL

October 28, 1960

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The Independent Petroleum Assn. of America wants major changes made in the import control plan. It adopted a nine-point program this week that would relate over-all allocation to crude demand and would eliminate historical quotas. Also, exempt Canadian oil would be deducted from the permissible level. . . . p. 8

•

The U.S. can meet its energy needs by 1975 from domestic sources. That's the finding of a study group which reports that costs would not be increased appreciably. . . . p. 13

•

Total demand for petroleum in 1961 will average 10,098,000 b/d, a 2.2% gain over 1960, an IPAA committee predicted this week. It added that demand for domestic crude should average 7.2-million b/d, up 2.7%. . . . p. 7

•

Secondary recovery projects in Texas are booming. Applications filed in the first nine months of this year indicate producers hope to recover three times the volume of 1959. . . . p. 20

•

Kuwait's government wants its own piece of the offshore oil pie. It has set up a national company, and partnerships with it are requisites for new offshore rights. . . . p. 33

•

By selling everything from hula hoops to watermelons, Billups Eastern Petroleum Co., dealers are supplementing their revenues materially. Nonpetroleum sales now account for 21% of their total. . . . p. 48

•

It could be that the smoke problem of jet engines at takeoff is nearing a solution. It is being attacked in several ways, including different designs for engines and new combustion methods. . . . p. 39

•

Versatility is the key to Delhi-Taylor's new unit for manufacturing orthoxylene. Among other things, the unit's twin towers can be disconnected and used for separate fractionation processes. . . . p. 38

•

An old technique has been revived to protect pipelines from corrosion. Texas Eastern Transmission Co. is using asbestos felt wrapping on an 81-mi. line being constructed in Pennsylvania. . . . p. 46

•

Operations on the Northeast Purdy unit in Oklahoma, the Mid-Continent area's largest waterflood projects, are moving into high gear. Limited injections have been started. . . . p. 24

Up to the Minute

SIGNIFICANT LATE NEWS

October 28, 1960

Predictions at midweek were that some downward adjustment would be made in crude and unfinished oil imports east of the Rockies for 1961. The Interior Dept. sent its recommendations to the White House proposing several changes that could bring about reduced allocations. One would be a reduction to reflect the Bureau of Mines' overestimate of demand in the first half of 1960. Also proposed by Interior officials are changes in the allocation formula to reflect increased residual fuel oil imports to the East Coast, higher petroleum movements from the West Coast to Districts I-IV, and a "corrective factor" for demand estimates.

•

W. K. Whiteford was chairman and E. D. Brockett was elected president of Gulf Oil Corp. this week. Whiteford, president since 1953, succeeds Ralph O. Rhoades, who is retiring as chairman, but will continue as a director. Whiteford will continue as chief executive officer. Brockett, formerly executive vice-president, will also be vice-chairman of the executive committee.

•

Humble Oil & Refining Co. started marketing in Oklahoma for the first time this week—its 39th state. The entry is under the Humble brand through a Lawton jobber. Humble's Tulsa-based Carter division never marketed in Oklahoma when it was a direct affiliate of Standard Oil Co. (N.J.), due to a lack of refining capacity there and due to an apparent conflict with Standard Oil Co. (Ind.) over rights to the "Standard Oil" trade name. Indiana markets in Oklahoma.

•

The Federal Power Commission's area price for new gas in southern Louisiana and Mississippi will be 20.96¢ per Mcf. That's the wellhead price at 14.65 psi., and is equivalent to 21.5¢ per Mcf. at 15.025 psi. The latter exceeds the 21.4¢ price that had been sought by the CATC producers, one of the gas rate proceedings remanded to FPC by the Supreme Court. It is now pending before FPC.

•

Reports of oil company earnings for the first nine months indicate that 1960 will be a good year profitwise (page 12). Gulf Oil Corp. reported its nine-month net at $237,910,000, up 9.9% over 1959. This year's earnings were equivalent to 1.2¢ per gal. of net crude and product sales. Sun Oil Co.'s nine-month profits totaled $34,852,000, up 8.4%, and Phillips Petroleum Co. reported $78,919,882, up 2% for the nine months.

•

U.S. interests are discussing with Petroleos Mexicanos a 275-mi.-pipeline to move Mexican residual oil to Brownsville, Tex. If arranged, it would represent a quota-exempt movement of residual estimated at from 10,000 b/d to 15,000 b/d.

•

Oklahoma's November crude allowable will be unchanged from October at 506,000 b/d. Purchasers' nominations averaged 495,650 b/d.

Economists See Demand Up 2.2%, U.S. Crude Output 2.7%, in '61

Predictions of 12 leading petroleum economists indicate that total demand in 1961 will top 10-million b/d for the first time. This had also been the group's prediction for 1960—but the goal was not reached.

The Supply & Demand Committee of the Independent Petroleum Assn. of America, headed by Ohio Oil Co.'s N. G. Dumbros, pegged total demand for all of 1961 at 10,098,000 b/d.

This is 2.2% higher than revised 1960 estimates of 9,883,000 b/d.

The report was made this week at the IPAA annual meeting in Dallas.

Last October, the same group had predicted that total demand in 1960 would average 10,045,000 b/d. The forecast was revised down because "the economy has not stayed at as high a level as had been anticipated" at the time of the previous study.

The two principal economic yardsticks used by the group to forecast demand were gross national product and the Federal Reserve Board index of industrial production.

For 1960 the committee estimated GNP—a measure of the value of the nation's production of goods and services at $503-billion, or $5-billion less than had been expected. The committee also trimmed its estimate of the Federal Reserve Board index of production from 112% to 108% of the 1957 average, in what it termed evidence of a "relatively shallow and short-lived interruption in general industry expansion."

The committee predicted that gross national product will edge up $1-billion next year, while industrial production will decline to 105, or to the 1959 level.

The group estimated the increase in total demand for 1961 at a moderate 215,000 b/d. This will reflect a gain of 223,000 b/d in domestic demand and a drop of 8,000 b/d in exports.

Domestic demand in 1961 was estimated at 9,900,000 b/d, compared with the 9,677,000 b/d now expected in 1960.

Export demand was forecast at 198,000 b/d for next year, down from this year's estimate of 206,000 b/d.

Heartening news for domestic producers is the IPAA committee's forecast for a 2.7% increase in U.S. crude production.

This follows in the wake of an anticipated 1960 decrease of 40,000 b/d in production from 1959.

Domestic crude production in 1961 is expected to average 7,202,000 b/d, up 188,000 b/d from 1960. The estimate allows for crude imports of 1,045,000 b/d—based on standards of the current program—but no change in crude stocks during 1961. It also hinges on a reduction of 49,000 b/d in products inventories during 1961.

But oil men were warned that continued steep fluctuations in inventories can seriously hurt producers and refiners alike.

Demand growth has been cut almost by half, the committee said, being appreciably lower than the rate that prevailed until five years ago (approximately 4%).

U.S. Petroleum Supply-Demand Forecast

(Thousands of b/d)

	1st Q 1961	2nd Q 1961	3rd Q 1961	4th Q 1961	Year 1961	% Change '61-'60
DOMESTIC DEMAND						
Gasoline	3,805	4,450	4,485	4,170	4,228	+ 2.2%
Kerosine	525	250	290	495	390	+ 8.0
Distillate	2,745	1,405	1,240	2,250	1,910	+ 2.4
Residual	1,900	1,340	1,210	1,605	1,514	— 1.0
Other	1,735	1,800	1,985	1,910	1,858	+ 4.2
Total	**10,710**	**9,245**	**9,210**	**10,430**	**9,900**	**+ 2.3**
EXPORTS						
Gasoline	35	42	42	40	40	0
Kerosine	2	2	2	2	2	0
Distillate	32	32	32	32	32	0
Residual	55	53	50	50	52	+ 4.0
Other	72	77	72	72	72	—12.2
Total	**196**	**206**	**198**	**196**	**198**	**— 3.9**
TOTAL DEMAND	**10,906**	**9,451**	**9,408**	**10,626**	**10,098**	**+ 2.2**
Stock Change	**—700**	**+406**	**+412**	**—327**	**—49**	.....
New Supply	**10,206**	**9,857**	**9,820**	**10,299**	**10,049**	**+ 3.0**
Runs to Stills	**8,162**	**8,132**	**8,165**	**8,393**	**8,215**	**+ 1.8**

Estimated Components of New Supply

(Thousands of b/d)

	1959	1960	Change	1961	Change
Total demand for refined products	**9,655**	**9,874**	**+219**	**10,091**	**+217**
Change in refined product inventories	+66	—58	.....	—49	.....
Total required products	9,721	9,816	+95	10,042	+226
Less NGL production	879	933	+54	977	+ 44
Less product imports	815	788	—27	825*	+ 37
Refinery demand for crude	8,027	8,095	+68	8,240	+145
Crude exports	7	9	+ 2	7	— 2
Total crude demand	**8,034**	**8,104**	**+ 70**	**8,247**	**+143**
Change in crude stocks	—15	—67	.....	.....	.....
Required new supply of crude	8,019	8,037	+18	8,247	+210
Less crude imports	965	1,023	+58	1,045*	+ 22
Domestic crude production	**7,054**	**7,014**	**— 40**	**7,202**	**+188**

*Based on import program now in effect.

IPAA: Cut Imports Substantially

Producer group seeks basic change in allocation method that would base over-all level east of the Rockies on crude demand, rather than total demand. It also wants historical quotas ended, and seeks to deduct Canadian imports from the allocation, as is done on the West Coast.

The Independent Petroleum Assn. of America again this week called for basic changes in the federal oil import control program.

After considerable debate at its annual meeting in Dallas, the IPAA adopted a program on imports calling for:

- A substantial reduction in the level of imports;
- Deduction of Canadian imports of crude, products, and gas liquids from the over-all permissible in areas east of the Rockies, as is done on the West Coast;
- Particular study of the exemption granted Canadian imports and its continuation only so long "as it is not abused;"
- Assignment of the allocation in Districts I-IV based on demand for crude, rather than on total demand, which includes light products, residual fuel oil, gas liquids, shipments from Puerto Rico, and other non-crude supplies;
- No exemption to be granted for the asphalt content of imported oil;
- Oil for military requirements in the U.S. to be supplied by domestic rather than imported oil;
- Elimination of historical quotas and continuation of allocations to all refiners.

The IPAA demand that the historical factor be eliminated in individual company allocations would mean that quotas would be based entirely on refinery throughput.

Any reduction in allocations under the IPAA program would be borne by the larger importers.

One private study suggested basing the future import allocations on a 10.6% ratio of refinery runs. It showed that such a percentage would permit crude and unfinished oils imports of 718,087 b/d east of the Rockies, slightly higher than the present allocation.

But the limitation of quotas to 10.6% of refinery runs with no historical factor would bring a few substantial reductions in individual allocations along with some increases for others, particularly companies with little or no import volume based on the historical factor.

The IPAA import statement praised the control program as being of "incalculable value," but said that the experience of 18 months of controls is that the industry is "not in the healthy condition necessary in the interest of national security."

The association noted that "allowables are low, drilling is down, [and] new reserves are not being found in sufficient amount to meet future U.S. requirements."

It also said that oil is "being sold substantially below replacement costs. Because of these conditions, sell-outs are increasing; hence there is a reduction in the number of independents, who have done most of the exploration for new oil and gas reserves."

IPAA commented that demand has increased by more than 600,000 b/d since 1957, but there has not been any increase in domestic crude production.

The group said that its proposed changes in the control plan represented a "sincere desire to improve the program so that its purpose will be achieved."

Imports Administrator Lawrence J. O'Connor, Jr., citing the reductions in total import volume under the control plan, raised the question of whether the federal government "should move to restrict production of natural gas and natural gas liquids, including condensate."

O'Connor told the IPAA meeting that, while foreign oil imports (excluding overland supplies from Canada) had been reduced "nearly 17% over the high point in 1959 when mandatory controls were instituted," the production of natural gas and gas liquids had shot up spectacularly.

O'Connor said that imports, excluding residual fuel oil, totaled 958,000 b/d in 1958 and rose to 1,030,000 b/d in the first quarter of 1959. But, he said, the total was only 861,000 b/d during the first half of 1960, including Canadian imports.

Domestic production of gas liquids for 1960, O'Connor said, is estimated at an average of 639,000 b/d, "an increase of 62% since 1954." The volume of gas liquids, he added, is approximately 90% of the estimated controlled crude imports in Districts I-IV [the areas east of the Rockies] for the same period.

"It becomes obvious that natural gas liquids—as well as natural gas itself—are continuing to move into markets created by the reduction of crude imports in Districts I-IV," O'Connor said.

The Interior Dept. official hastened to add that there are no federal plans to implement such a "hypothetical" program to help stabilize the domestic oil market.

"I certainly do not subscribe to this hypothetical solution—nor does anyone else involved in the administration of the import program," O'Connor commented.

"Actually, any serious proposal along these lines would, I believe, raise the formidable enmity of the IPAA and its members."

But O'Connor did disclose that his office is "studying the possible impact of planned importation of 25,000 b/d to 75,000 b/d of gas liquids from Canada."

He commented that "our domestic producers generally accept the philosophy behind the exemption of Canadian imports and do not object to a reasonable and natural growth of Canadian imports into the U.S.

"While the Department of Interior has not yet reached a formal policy regarding this matter, I do not personally believe that our domestic producers will feel that imports of natural gas liquids in this volume are within the spirit of the Canadian exemption."

O'Connor asserted that "dollars and cents are the primary considerations in importing crude" and he reaffirmed the necessity of "providing an aspirin today for the domestic industry so that any oxygen tent will be unnecessary tomorrow."

It is doubtful that any industry could withstand the degree of competitive pressure that uncontrolled imports would place on domestic crude markets, O'Connor said.

But, he added, oil imports account for only 4.8% of total U.S. energy requirements and cannot be blamed for the declines in domestic production, the loss of individual markets, or

any direct influence on "individual affairs."

But he warned the producers that import controls are not a "cure all," but rather just one component of national policy regarding petroleum.

The fact of the matter is, O'Connor said, "that oil import controls are not designed, nor so administered, to control the competitive interplay of various energy sources. The mandatory import program can merely keep oil imports at a level consonant with national security objectives, including all national considerations. To believe that our program can do otherwise is sheer folly."

Meanwhile, J. Roy Price, assistant director of the Office of Civil & Defense Mobilization, said "a major effort is being made to analyze prices" in connection with import controls.

Price said his office is concerned with both price increases and price declines.

Residual fuel oil prices in the east are being given special attention, he said. "I am just as concerned with depressed prices as I am with unwarranted price increases. I know that continually declining prices, and reduced production cannot long maintain a strong and healthy industry."

Price also said that OCDM is surveying proposals to require 50% of imports to this country to be carried in U.S.-flag tankers and proposals to exempt asphaltic content of crude from controls.

"Final statements have been received from the industry, and our evaluation is now under way in coordination with other interested agencies," Price said.

The IPAA commended the Federal Power Commission "for its forthright recognition of the impossibility of applying utility-type regulation to producers of natural gas."

But the association's stand on the recently announced area pricing policy of FPC for regulating independent producers included another plea for congressional action to free gas producers from any form of federal control.

"It must be recognized, however, that any type of regulation based upon administrative standards and criteria is uncertain and may be subject to question. Only remedial legislation can provide the incentives and the stability that are essential to the discovery and development of gas reserves adequate for anticipated future consumer demands," IPAA's statement continued.

The membership approved the recommendation of its natural gas committee that IPAA "continue cooperative efforts with representatives of producing, transmission, and distributing segments of the natural gas industry."

IPAA also approved a report from its Federal and Public Land Committee supporting the objectives of the Mineral Leasing Act revision of 1960, but disagreeing with the proposed administrative regulations.

The regulations proposed by the Interior Dept. would establish annual rentals of noncompetitive leases of 50¢ per acre for the first five years and $1 an acre for the last five years.

The producers objected to the higher rental on the grounds that it is higher than the average rental being paid under other lease agreements on comparable exploratory acreage.

Canada's Trade Minister:

The Key Man on Energy Policy

George Hees, a dapper, 6-ft.-plus former businessman, is Canada's new Minister of Trade & Commerce, the man responsible for energy policy, which includes export and import of oil and natural gas.

Hees becomes the responsible official for making recommendations to the Canadian Cabinet on permits for the construction of long-distance pipelines in Canada and on such matters as export of gas to the U.S.

A five-member National Energy Board does research on fuel policy matters, but the final decision on major issues of import and export permits for gas and a possible import policy for oil and refined products rests with the Cabinet.

Hees generally is regarded as one of the abler and more popular ministers—a possible Prime Minister in the future if the Conservative Party continues in power.

His appointment to the important Trade Minister post in last week's Cabinet reshuffle by Prime Minister John Diefenbaker came as no real surprise. Hees succeeded Gordon Churchill, who was shifted to a less sensitive position as head of Veterans Affairs. Churchill will continue as government leader in the House of Commons.

Hees, as far as is known, has no preconceived ideas on oil and gas policy.

But one clue to his thinking is that as the representative in the House from a Toronto constituency, and as a former Toronto manufacturer, he's not apt to be partial to oil import restrictions that could increase the cost of fuel in Eastern Canada.

Hees is taking over the Trade & Commerce post at a time when

George Hees

pressure is mounting rapidly from a vocal group of Western producers for some restrictions on oil imports (PW—Oct.14'60,p13). There is equally strong opposition within the oil industry from Eastern refiners—a situation that will keep Hees in a delicate position.

Hees was previously minister of Transport, which, on the formation of the present government in 1957, gave him the task of administering the Canadian side of the St. Lawrence Seaway.

The 50-year-old Hees won a seat in the House for Toronto-Broadview in 1950, on his second try. He quickly became a power in the then rather small Conservative opposition, and became president of the National Conservative Assn.

He disposed of his interest in his family's firm, a leading manufacturer of drapery and upholstery fabrics, and devoted his full time to politics.

Companies that refine 74.2% of the crude reported Oct. 1 stocks below desired level.

(Stocks in millions of bbl.)

	Actual	Desired	Difference
Crude	169.4	179.4	—10.0
Gasoline	151.0	146.8	+ 4.2
Kerosine	25.9	27.0	— 1.1
Distillate	136.0	140.4	— 4.4
Residual	30.5	31.9	— 1.4
Total	512.8	525.6	—12.8

Their desired estimates would make the total industry Oct. 1 stocks low.

(Stocks in millions of bbl.)

Actual	Desired	Difference
231.9	235.0	— 3.1
187.4	197.8	—10.4
35.2	36.4	— 1.2
169.0	189.3	—20.3
50.3	43.0	+ 7.3
673.8	701.5	—27.7

Last spring the Nov. 1 desired levels were:

253.4
156.1
33.0
156.0
48.6
646.6

Data based on reports of companies to Texas Railroad Commission.

Desirable Inventory Levels Go Up

At least one member of the Texas Railroad Commission—Olin Culberson—believes that some improvement is needed in the methods of seeking information on desired stock levels from purchasers of Texas crude.

Culberson made his comment during last week's statewide hearing, in Austin, when companies that refined 74.2% of the crude processed in September reported that their inventories are less than desired.

"Maybe we just think stocks are excessive," Culberson observed. "Could it be that the only reason they are excessive is because purchasers tell us so every March? Yet on four occasions this year, purchasers have admitted to us, individually, under oath, that their own stocks are about right.

"Since desired stock information is so important," Culberson said, "perhaps we ought to set up a new reporting system that will eliminate the apparent confusion of the purchasers.

The indications from the data reported to the Railroad Commission are that most companies now have set their sights on a higher level of desired stocks (table, above).

That can be deducted from an extrapolation of the data submitted by the reporting companies (table, page 11) to cover the remaining companies, which refine 25.8% of the crude, giving an approximate industry-wide Oct. 1 desired stock pattern, compared with actual stocks at the start of the month.

Such an extrapolation shows that the more than 36 companies reporting on their own inventories were 10-million bbl. below their Oct. 1 desired position on crude and 2.8-million bbl. below desired on products.

That was the point that drew Culberson's comments.

The industrywide position on inventories of crude and major products is well under the levels that many companies now say are desired.

Expanding the desired levels of the reporting companies places the Oct. 1 desired position of the whole industry at 701.5-million bbl., or 27.7-million bbl. above present inventories.

The indicated position of the total industry on Oct. 1 was 3.1-million bbl. under desired on crude and 24.6-million bbl. under on the major products.

According to those estimates, U.S. gasoline stocks are 10.4-million bbl. less than desired.

Such a position seemingly is in contradiction to statements by many industry officials that stocks are excessive. It is especially in contradiction to the relative softness in prices.

At the start of this week, for example, a survey of the petroleum markets shows that gasoline prices in Chicago can be shaded by 0.25¢ a

200,000 See Detroit Petroleum Exhibit

A computer mechanism that clicked off gasoline tax figures attracted much attention at Detroit's automobile show last week.

More than 200,000 persons took time to look at the petroleum industry's exhibit, which now will be transported in its entirety to Chicago for display during API's annual meeting, November 14-16.

Focal point of the big display was a 15-ft.-high working model of an automobile cylinder.

In the picture, the Koitek family of Detroit watches as the computer racks up a total of $133-million in gasoline taxes collected throughout the nation in a week.

gal., that discounts of a similar amount are available along the Great Lakes Pipe Line system, that distillate prices have been trimmed in some East Coast areas by 0.2¢ a gal., and that there is no activity in the spot market on the Gulf Coast.

Last week's estimate of the desirable inventory position for Oct. 1, when extended to cover the full industry, is 54.9-million bbl. above the level that most companies said last spring would be desired by the start of November.

But even with a higher estimate of desired inventories, the industry is rapidly filling up its actual stocks, with every indication that by Nov. 1 inventories will be considerably above the old estimate of desired stocks.

At the start of October, total industry stocks of crude and the four major products were 27.7-million bbl. below the newly computed desired position. By mid-October, though, actual inventories had increased by 8.4-million bbl. That means that, while the latest stock report showing 682.2-million bbl. of crude, gasoline, kerosine, distillate, and residual fuel oil in storage would place the inventory position below the new Oct. 1 desired level, it would be well in excess of the old estimate of 646.6-million bbl.

Only six of the companies reporting to the commission showed overall inventory surpluses.

American Petrofina had a surplus above desired of 35,800 bbl.; Atlantic 334,000 bbl.; Crown Central 436,700 bbl.; Shell 133,000 bbl.; Standard of Texas 68,818 bbl.; and Suntide 172,000 bbl.

Twelve of the 32 refiners reporting to the commission showed that their operations during September were at 85% of capacity or greater. Those were: Cities Service, Crown Central, Gulf, Indiana Standard, Pure, Shamrock, Shell, Sinclair, Skelly, Sohio, Texaco, and Tidewater.

Regardless of the lower-than-desired stock positions reported, the Railroad Commission decided to hold the crude allowable in check for another month—the seventh eight-day producing schedule this year.

The initial allowable for November was set at 2,667,508 b/d, an increase of 47,740 b/d over the mid-October due to one less calendar day in September.

In Louisiana, Conservation Commissioner James Gill set the crude allowable for November and December at an average of 982,467 b/d, up 14,411 b/d from the September-October permissible.

	REFINERY RUNS		STOCKS REPORTED AS OF OCT. 1 (Thousands of bbl.)									
	Sept. 1960	% of Capacity	Crude		Gasoline		Kerosine		Distillate		Residual	
Company	B/D	Operated	Actual	Desired	Actual	Desired	Actual	Desired	Actual	Desired	Actual	Desired
American Liberty Pipe Line	—	—	160.7	250.0	—	—	—	—	—	—	—	—
American Petrofina	6,807	68.1	75.7	75.0	113.3	102.9	4.5	5.0	138.6	115.0	4.1	2.5
The Atlantic Refining	162,319	77.3	6,455.0	5,787.0	2,492.0	2,554.0	1,313.0	1,119.0	5,440.0	5,936.0	961.0	935.0
Bell Oil & Gas	6,390	75.0	16.5	20.0	27.4	30.0	19.3	17.0	7.2	8.0	9.4	10.0
Bryson Pipe Line & Refg.	488	50.0	4.0	5.0	5.9	1.5	0.2	0.5	1.5	0.5	1.5	0.5
Cactus Petroleum	2,658	66.5	20.2	50.0	13.1	15.0	1.2	1.5	35.7	35.7	11.5	3.0
Cities Service Oil	259,558	88.6	7,285.0	8,500.0	6,400.0	6,500.0	1,448.0	1,500.0	8,443.0	9,000.0	775.0	800.0
Continental Oil	173,512	81.0	4,449.4	4,450.0	3,688.2	3,506.0	338.2	362.0	3,171.1	3,789.0	405.7	400.0
Cosden Petroleum	37,598	74.5	444.0	444.0	752.0	752.0	15.0	15.0	160.0	130.0	30.0	30.0
Crown Central Petroleum	34,462	86.2	465.3	450.0	978.4	550.0	173.7	250.0	563.1	500.0	76.2	70.0
Danaho Refining	4,000	33.3	6.5	12.0	22.2	15.0	15.0	15.6	2.8	2.0	3.7	2.0
General American Pipeline	—	—	102.0	115.0	—	—	—	—	—	—	—	—
Gulf Oil	453,000	85.0	12,300.0	13,500.0	16,700.0	14,700.0	2,700.0	3,400.0	13,700.0	14,000.0	4,400.0	4,400.0
Humble Oil & Refining	817,200	84.9	18,400.0	20,400.0	17,100.0	17,000.0	3,600.0	3,600.0	17,900.0	17,300.0	2,900.0	3,200.0
Indiana Oil Purchasing	626,800	88.6	26,050.0	26,565.0	16,605.0	16,587.0	4,706.0	5,217.0	10,803.0	11,625.0	2,969.0	3,111.0
LaGloria Oil & Gas	16,800	70.0	104.2	125.0	298.1	275.0	18.3	15.0	39.1	60.0	21.2	25.0
Monarch Refining	2,431	60.0	7.4	15.0	12.3	19.0	0.3	0.3	0.6	1.1	0.2	0.2
Phillips Petroleum	204,900	75.2	1,975.0	2,208.0	7,701.0	7,742.0	686.0	684.0	6,561.0	7,365.0	136.0	100.0
Premier Oil Refg.	14,884	68.6	280.1	350.0	114.2	200.0	32.1	50.0	50.9	70.0	82.0	100.0
Pure Oil	165,113	91.7	4,976.0	6,160.0	4,225.0	3,950.0	1,203.0	1,300.0	1,700.0	1,550.0	599.0	700.0
Rodo Refining	818	55.0	3.1	10.1	9.6	8.0	7.4	5.0	6.4	7.0	1.0	0.5
Republic Oil Refining	22,856	51.0	337.0	750.0	991.4	1,000.0	398.0	500.0	752.8	750.0	56.5	60.0
Scurlock Oil	—	—	332.7	332.7	—	—	—	—	—	—	—	—
Shamrock Oil & Gas	24,240	93.2	94.9	94.9	523.0	550.0	7.9	15.0	93.0	60.0	89.0	70.0
Shell Oil	538,784	90.7	15,594.0	15,808.0	14,754.0	14,139.0	3,592.0	3,426.0	11,253.0	11,504.0	2,956.0	3,139.0
Signal Oil & Gas	49,288	82.1	270.2	600.0	380.9	200.0	22.2	100.0	583.3	750.0	125.2	300.0
Sinclair Crude Oil	412,400	88.9	13,559.0	14,500.0	8,081.0	7,800.0	1,673.0	1,625.0	9,541.0	10,200.0	2,945.0	3,100.0
Skelly Oil	51,153	94.0	1,149.1	1,217.0	1,091.4	1,260.0	76.3	70.0	1,553.3	1,500.0	327.4	325.0
Mobil Oil	582,000	82.4	19,100.0	19,000.0	14,400.0	14,050.0	2,120.0	2,120.0	18,480.0	18,983.0	2,670.0	2,900.0
Sohio Petroleum	144,900	85.0	4,700.0	5,500.0	2,866.0	2,866.0	723.0	723.0	2,363.0	2,363.0	246.0	246.0
Southern Minerals	—	—	388.0	450.0	—	—	—	—	—	—	—	—
Standard of Texas	41,092	54.8	819.9	750.0	619.8	575.0	56.4	40.0	249.5	266.0	70.1	116.0
Sun Oil	199,200	78.0	5,352.0	5,852.0	5,088.0	4,888.0	210.0	210.0	3,189.0	3,189.0	819.0	619.0
Suntide Oil	40,187	61.7	544.5	275.0	670.9	540.0	52.9	10.0	602.3	600.0	55.1	25.0
Texaco	663,591	89.8	18,446.0	20,100.0	19,541.0	19,550.0	—	—	12,377.0	12,635.0	5,879.0	5,400.0
Tidewater Oil	239,000	86.9	4,179.0	4,220.0	4,754.0	4,850.0	696.0	642.0	6,274.0	6,213.0	1,782.0	1,735.0
Other companies reporting	—	—	419.8	438.9	18.7	12.4	0.6	1.6	0.7	1.6	1.4	1.7
Total	**5,998,149**	**—**	**169,366.2**	**179,379.5**	**150,976.8**	**146,787.8**	**25,909.6**	**27,039.5**	**136,039.9**	**140,453.9**	**30,528.2**	**31,926.4**

Nine-Month Earnings Show Gains Due to Cost Cuts, Better Prices

Despite a continued oversupply, the first nine months of 1960 proved to be a better earnings period for some companies than last year.

Early reports on oil company earnings for the first nine months of 1960 indicate that profits for many companies are bouncing back from the somewhat depressed levels of 1959, when prices were softer throughout most of the year.

Significantly, third-quarter earnings are showing a strong comeback so far, too.

Tidewater Oil Co.'s net for the first nine months was the highest in the company's history—12.6% above the same period in 1959. Total net income was $31.4-million, compared to $27.8-million last year. Third-quarter earnings soared 42.1% over 1959 to $13.1-million.

Commonwealth Oil Refining Co. reported an increase of 307% for the nine-month period. Net earnings totaled $3.7-million against $901,000 in the first nine months of 1959. The company's third-quarter earnings were up 154.8% over last year, to $2.6-million.

Socony Mobil Oil Co. chalked up a rise of 10.5% for the first nine months of 1960, with net profits at $135.9-million compared with $123-million during the like period a year ago. Third-quarter net rose 14.4% over last year, to $52.5-million.

Imperial Oil Ltd.'s nine-month earnings were $46.7-million, or 24% higher than last year.

Continental Oil Co. scored a nominal gain in earnings during the first nine months of 1960—it netted $45.4-million, or just 0.2% more than in the like period of 1959. But the company earned $16.9-million during the third quarter, a gain of 4.8% from the third quarter of 1959.

Of the major companies reporting so far, only one shows a lower nine-month net than last year.

The loner was Sunray Mid-Continent Oil Co. While it had an increase in third-quarter earnings over the same period of 1959, it reports that this was "not enough to offset reductions in the first two quarters due to the national domestic market, which was unstable because of a general oversupply of refined products." Its nine-month earnings were $29.1-million, compared with a net of $30.8-million for the same months of 1959.

Along with relatively stronger prices, cost-cutting programs and other factors were credited for the better profits showings.

George F. Getty II, Tidewater's president, says the company's record earnings represent benefits from a substantial capital building program which Tidewater has undertaken, and from "the concerted efforts of management to better the company's operating efficiency and competitive position."

Continental attributes its gains—aside from a higher level of prices for certain refined products—to increased receipts from operations, lower tangible development costs, and a smaller provision for possible loss on foreign investment.

Sinclair Shutdown Affects Three Units

Sinclair Refining Co. is shutting down three main processing units at its Corpus Christi (Tex.) refinery.

Sinclair officials said it was a choice of shutting down the three old units—thermal, reforming, cat cracking, and alkylation—which could no longer be maintained economically, or replacing them with modern facilities.

The latter would have entailed large capital expenditures unwarranted by present over-all conditions.

The daily throughput of the refinery will not be affected by the shutdown.

Existing units will be operated more extensively to compensate for the shutdowns.

The refinery work force will be reduced, Sinclair said. Some employees will be offered transfers to other Sinclair refineries. Terminated employees will receive substantial severance and vacation checks, and other benefit-plan allowances.

All told, the shutdown will affect 175 employees.

Arab Congress Ends on Soft Tone

The Second Arab Oil Congress ended its Beirut sessions with only four mild resolutions. They came as an anticlimax to bitter week-long debates dominated by pricing issues.

Last year's meeting, by contrast, issued a dozen recommendations to Arab governments.

The current resolutions merely reiterated support for governments that want to improve their concession terms; chided oil companies for not consulting with affected Middle East governments before deciding on price cuts; and supported those governments in their refusal to recognize such reductions.

Leaders of the Arab delegations that drew up the resolutions also took the unusual step of setting the place for the next Congress—Cairo.

Henceforth, one resolution states, the Congress will be an annual affair, convening on Monday of the third week in October. In the past, the Arab League Petroleum Experts Committee selected the time and place.

The Russians, unexpected open declaration of competitive aims may have been one reason for the mildness of the resolutions (page 33).

This new competition, it was felt, sharpened the community of interests of oil companies and Arab governments alike.

Another reason was the concern of the Congress organizers—and the governments behind them—not to widen a company-government split that materialized ominously, in working sessions.

The split followed attacks by Saudi Arabia's Abdullah Tariki on oil company pricing policies. Vehement defense of their polices by the companies helped somewhat to restore mutual good faith in the final working session.

Brighter Future for Oil

Better prices and brighter prospects already are making "pessimists of only a few months ago look rather silly," in the opinion of E. E. Wall, president of California Oil Co.

Wall frankly told the Pennsylvania Petroleum Assn. this week that he wanted to "cast a few rays of sunshine onto what has been pictured as a pretty dark horizon" for oil generally.

He cited the industry's background of achievement, and of wrestling with the problem of oversupply, as well as the outlook for even more intensive industry growth around the world.

He predicted great gains in demand over the next 15 years, in this country and abroad.

U.S. Output Can Meet All 1975 Needs

The U.S. in 1975 could satisfy all its demands for energy from domestic sources—including oil and natural gas—at no significant cost increase, a new report for Resources for the Future, Inc., finds.

The massive study of energy in the U.S. economy, to be released in November, reaches this broad conclusion: Energy demand between now and 1975 could be met from domestic sources at no significant increase in constant dollar costs.

The report applies the finding not only to the energy total, but also to each of the energy sources—oil and gas liquids, natural gas, coal, and hydro-electric power.

Authors of the study say it "greatly weakens" arguments used to oppose restrictions on oil imports.

The report has this to say:

"Concern about the adequacy of domestic energy resources has played a major part in many important and highly controversial questions. To cite only two—the pace and scope of the national program for developing commercial atomic power, and the policy of restricting oil imports into the U.S."

On the oil imports program, the study comments:

". . . advocates of greater, or even unrestricted, freedom in the importation of crude and products into the U.S. have sometimes argued that such a policy is essential because of the inadequacy of the domestic resource position and the rapidly rising costs which would result from relying on native crude.

"The broad conclusion reached in this study, if substantially correct, greatly weakens the force of these arguments."

Whether the U.S. will become self-sufficient in energy, however, will be determined by policy decisions in industry and government.

The Resources for the Future writers quickly point out that their study is not a forecast that the U.S. will satisfy its energy demands domestically, nor is it a recommendation that the country should choose to do so.

Policy decisions will dictate the future course of petroleum imports, but the study claims that the U.S. has the ability to become self-sufficient if such a goal is desirable.

The report warns against concluding, on the basis of the self-sufficiency finding, that all the information needed for answering the imports policy question is necessarily at hand. Policy problems generally are too complex to allow a solution based on a single factor, even such a factor as domestic adequacy of resources.

On oil imports, the report presents further questions: "Even though the U.S. oil resources could satisfy future needs at relatively constant costs, foreign oil is even today far cheaper than domestic oil, and the gap in comparative costs might widen in the future.

"Is it not, therefore, advantageous to obtain oil from the lower-cost foreign sources of supply? If so, how, if at all, should foreign and domestic sources be balanced in order best to satisfy the political and security factors which must be considered in connection with so vital a commodity?"

The report leaves the answers to such questions to policy-makers, but stresses its further finding:

"The U.S. is not compelled to adopt particular import policies because of impending resource exhaustion in any of the mineral fuels, or the threat of steeply rising costs."

Total crude consumption in the U.S. is estimated to rise 85.8% between 1955 and 1975, from 2.8-billion bbl. to 5.2-billion bbl. (table, below).

Crude availability in the U.S. in 1975 could be on the order of 6-billion bbl., more than enough to meet the demand requirements, the study estimates.

The report makes an important reservation, however—that whether the undiscovered resources it includes in its base will be found depends, in part, on advances in technology and on incentives for search.

Consumption of gas liquids is estimated to rise by 195.8% by 1975, and natural gas by 106.8%.

Natural gas availability by 1975 could be about 22.5-trillion cu. ft., the report finds.

Coal's consumption increase between 1955 and 1975 is seen at 70.3%—not much less than crude oil.

Hydroelectric power usage is expected to show a gain of 120.8% by 1975.

Electricity's expected high rate of growth will be largely responsible for the increase in coal consumption, according to the report; coal is expected to continue as the electric industry's major fuel source.

"The major inroads of gas and oil into coal's railroad and residential markets have already been made," the report says. "Their future gains in these markets will no longer be large enough to offset coal's estimated greatly expanded use in connection with the growth of electric power generation. This explains the estimated substantial increase for bituminous coal compared with its decreases in the past.

"Oil and natural gas . . . will no longer benefit as much as they have in the past from coal's loss of customers in railroading and household use, and consequently their growth in the future is expected to be less rapid than in the past."

The impact of atomic energy is expected to hit first at coal's market.

The report speculates on future nuclear power uses, and predicts that, beyond 1975, coal may face an ominous future.

Coal displacement probably will come as a result of its close alignment to electricity.

The report, of almost 750 pages, will be published in book form by Johns Hopkins Press in late November. Its authors are Sam H. Schurr, Bruce C. Hetschert, Vera F. Eliasberg, Joseph Lerner, and Hans H. Landsberg. All are on the staff of Resources for the Future, Inc., a nonprofit research and educational organization financed by the Ford Foundation.

Some energy sources will grow fast, but positions in market will remain generally unchanged

	Energy Consumption by major sources			Share of Market of each energy source	
	1955	1975	Pct. Change	1955	1975
Coal (millions of tons)	451	768	+ 70.3	28.8%	25.5%
Crude (millions of bbl.)	2,774	5,154	+ 85.8	40.5	40.1
Natural gas (billions cu. ft.)	9,614	19,881	+106.8	24.0	26.5
Gas liquids (millions of bbl.)	260	759	+195.8	3.1	4.7
Hydropower (billions of kwh.)	120	265	+120.8	3.6	3.2

Kuwait Denies It Is Ready to Cut Production

BEIRUT—Kuwait government officials are clearly somewhat irked by recent Venezuelan statements to the effect that Kuwait is ready to "cut back" its production in an international proration scheme.

Such comments, for instance, were made by Juan Perez Alfonzo, Venezuelan Oil Minister, in statements published Oct. 3 in Washington, and again on Oct. 6 in Caracas on his return from the Baghdad conference of oil exporting countries.

Perez declared that Kuwait was "in a more radical position" than Venezuela regarding regulation of production. He said the Kuwait government had complained about its "overproduction," and on its own initiative wanted to cut back its output because it has more than $2-billion on deposit in London.

When asked about this, Feisal Mazidi, one of the two official Kuwait delegates to the Baghdad conference in September, and also a delegate to the Arab Oil Congress here last week, said he wished to avoid direct comment on any statements made by anybody else, but he could clarify Kuwait's position as follows:

"What Kuwait said at the Baghdad conference of exporting nations was that it was willing to accept a smaller share of the increase in oil demand than the other participating countries. But we have absolutely no intention of actually cutting production. The Kuwait delegation never suggested such a possibility. Of course, if conditions change greatly in the future, we may have to adopt a different program, but this is definitely Kuwait's position as of now.

"This situation is totally unrelated to what Kuwait has, or has not, in the way of money invested in London."

Mazidi also explained that, contrary to other rumors, Kuwait was unwilling to accept population as a factor in any future prorationing formula.

Some sources have been suggesting that each country's "need" for oil revenues, based on the size of its population, be included, along with reserves and other factors, in formulating individual export quotas. Such an approach, of course, would be of more interest to Iran, with its population of nearly 25-million, than to Kuwait, with a population of only 200,000.

* * * *

Mazidi, who is economic assistant in Kuwait's Finance & Economy Dept., and also one of the two government members on Kuwait Oil Co.'s board of directors, put it this way:

"Our over-all position is quite simple. We are anxious to see crude oil prices stabilized. Revenues from oil constitute more than 90% of our country's total income, and we have no other resources to draw on. Our whole economy depends on oil.

"We are ready to do our part and accept a smaller increase in the rate of growth of our production than the other members of OPEC (Iran, Iraq, Saudi Arabia, and Venezuela).

"This is a sacrifice for Kuwait, because our production actually has been expanding at a faster rate than most of the other members, rising some 14% this year alone.

"We feel that if we are not ready to make some sacrifice in our export growth to help stabilize prices, we cannot expect the other member countries to cooperate. But on the other hand, we cannot be expected to go to the point where we are penalized."

* * * *

In reply to questions, Mazidi made two other significant points on the proration schemes to be discussed at future OPEC meetings:

- "One condition" of any proration formula must be exemption from production restrictions of the smaller oil companies in Kuwait, such as Aminoil and the Japanese-owned Arabian Oil Co. "These companies have not yet recovered their investments," he pointed out, and thus "they are entitled to special treatment in the generally accepted philosophy of protection of infant industries." (Under this approach, any production restriction would have to be applied entirely to Kuwait's single major oil company, Kuwait Oil Co., owned jointly by BP and Gulf.)
- Another condition is that any export quotas decided on must be kept "flexible," and reviewed and revised if necessary every year.

* * * *

Mazidi went out of his way to stress that Kuwait is a "strong supporter" of the OPEC organization formed at the Baghdad conference, for two chief reasons.

First, it regards the creation of this united front of producing countries as "very useful." Such an organization provides a common meeting ground for exchange of ideas on mutual problems, and for a "united stand" on prices, unification of oil concession agreements, and similar matters.

Second, it regards some form of production proration as desirable not only to help stabilize prices, but also to encourage "balanced growth" of the Middle Eastern economy as a whole, rather than of scattered, unrelated units. "This will not only help our neighbors," Mazidi pointed out, "but it will also help Kuwait indirectly in the long run."

What's New / IN THE INDUSTRY

Treasury Secretary Robert G. Anderson believes the current economic sideslip is about finished. His comments to the Commerce Dept.'s Business Advisory Council came several days after government economists conceded that over-all business activity had dipped in the third quarter. Gross national product, according to the President's Council of Economic Advisors, fell off $2-billion in the July-September period from the $505-billion annual rate in the preceding quarter.

•

Kansas' crude allowable for November will average 300,000 b/d, the highest since last April. The 5,000 b/d hike from October was approved last weekend by the Kansas Corporation Commission. Crude buyers had nominated for 306,198 b/d for November.

•

Continental Oil Co. has offered Calvert Petroleum Co., of Tulsa, $10.5-million for its producing properties and leaseholds. Calvert officials have approved the proposal, but it is still subject to board and stockholder agreement. If the deal goes through, Continental will acquire 190 oil and gas wells producing 1,200 b/d in Illinois, Indiana, Oklahoma, and North Dakota, and 17,000 producing acres and 84,000 undeveloped acres in the same states plus Nebraska, Utah, and Texas. One-third of the undeveloped leases are in Oklahoma's Kingfisher County where drilling is under way. The sale would mean dissolution of Calvert.

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Wilcox Oil Co., Tulsa, has received a conditional offer for its assets. Although the proposed purchaser's name was not disclosed, the company has hired an engineering firm to evaluate its reserves. The report is expected in 90 days.

•

Baytown (Tex.) refinery employees of Humble Oil & Refining Co. will vote Nov. 10-11 on union representation. Their choice, under an agreement reached with the National Labor Relations Board, can be either the Oil, Chemical & Atomic Workers Union, the Baytown Employees Federation, or no union at all.

OCAW ousted the federation last August, although it had represented the Baytown employees for 20 years. The Federation petitioned for a new election early this month, contending that a majority of the 3,100 employees wanted it again, instead of OCAW.

•

Arguments in the Thurman Pava suit against import controls were taken under advisement last weekend by Federal Judge G. C. Sweeney. Pava, a Springfield (Mass.) service station operator, contested a government move in Boston District Court to quash the suit on the ground that he hadn't exhausted his administrative remedies, and that the suit should have been filed in the District of Columbia anyhow. Pava's contention is that the import control program is invalid and unconstitutional.

•

The petroleum industry's fire losses decreased slightly in 1959, according to the American Petroleum Institute. The insurable value reported for 1959 was $12,670,317,822, and the fire losses were reported at $6,851,192. The loss ratio was 5.4¢ per $100 of insurable value, compared with 8.2¢ for the previous year.

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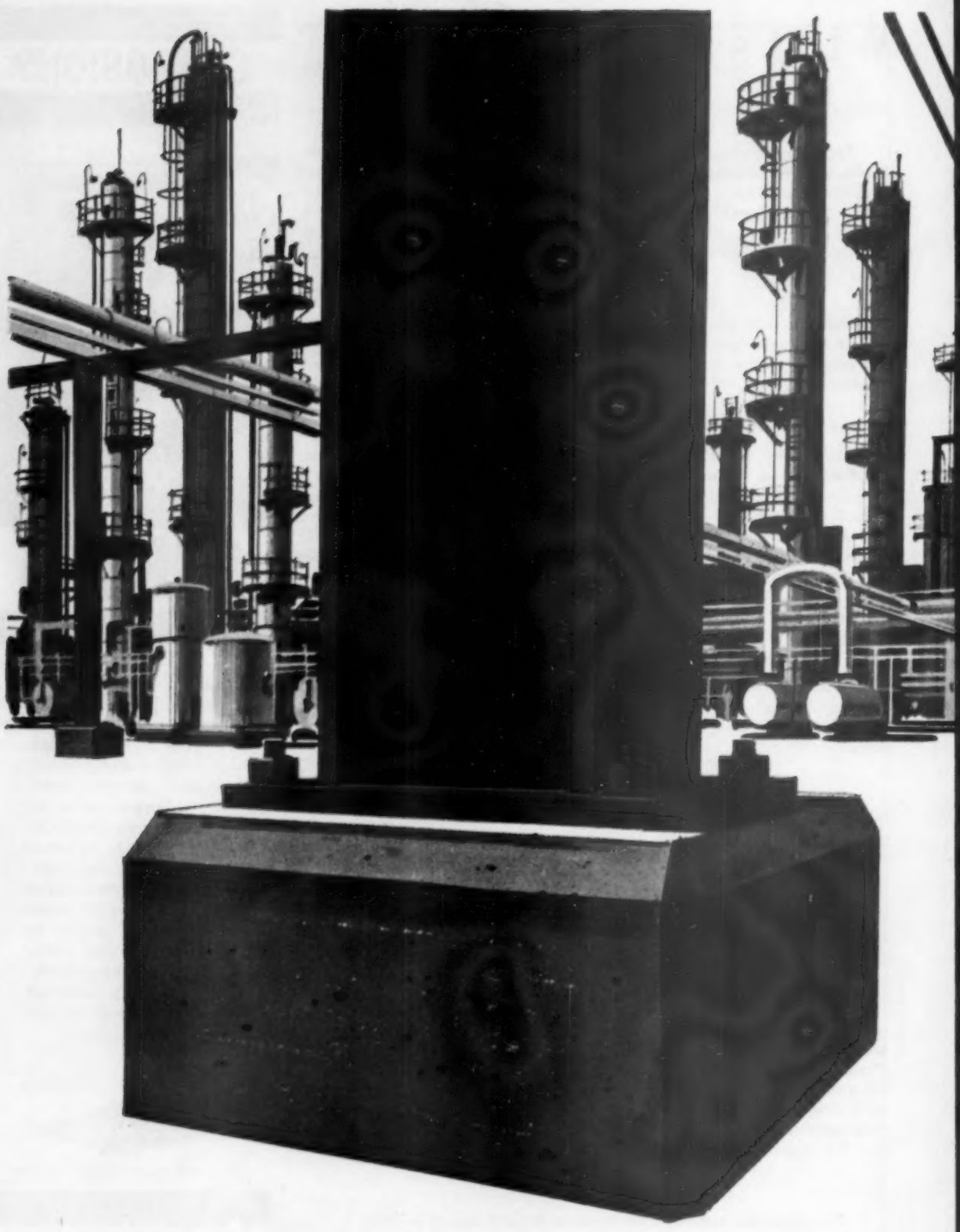

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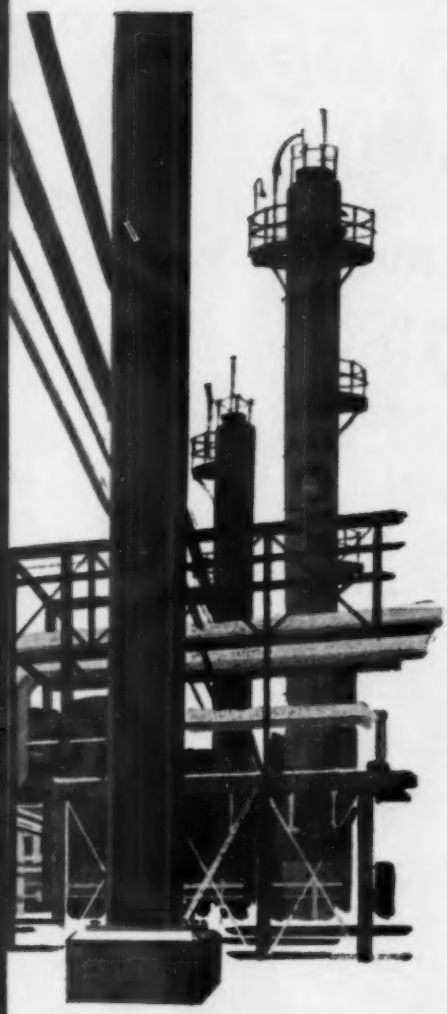

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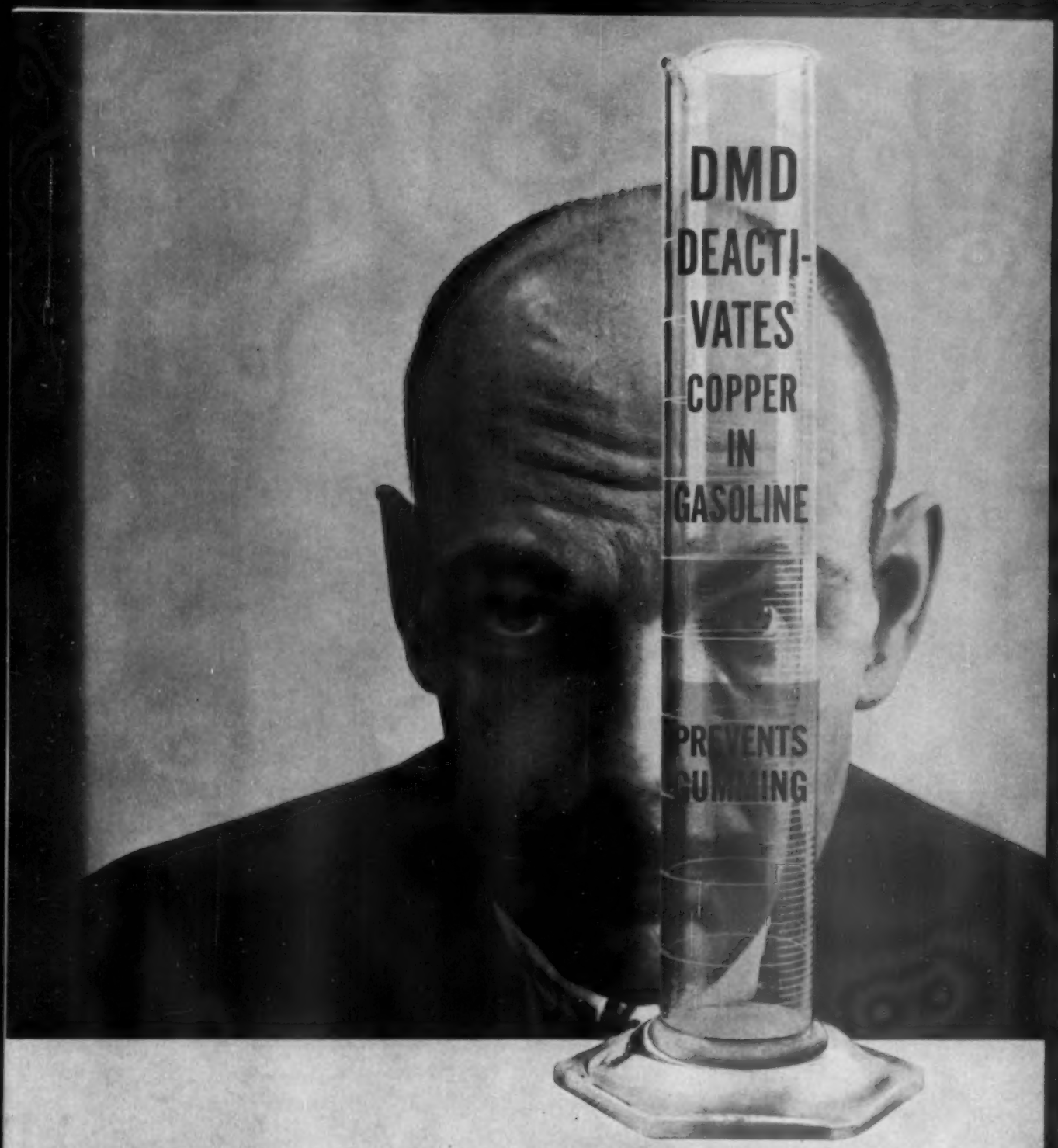

HERE IS ENOUGH (3 ounces) Du Pont Metal Deactivator to prevent copper-caused gumming in 8000 gallons of gasoline. ■ Somewhere, somehow, nearly every gallon of the gasoline, kerosine, jet or diesel fuel you produce will come in contact with at least a tiny bit of copper. Can't be helped. ■ By adding DMD to the fuel, you convert any dissolved copper into harmless chelate complexes. Result? No gum, no loss of product quality, no complaints. ■ This additive, which Du Pont pioneered 20 years ago, is still the best metal-deactivator known to petroleum science. And as you can see, a little goes a long way. Figure the economics for yourself, or ask us to. ■ E. I. du Pont de Nemours & Co. (Inc.), Petroleum Chemicals Division, Wilmington 98, Delaware.

DU PONT

LEAD ANTIKNOCK COMPOUNDS and OTHER PETROLEUM ADDITIVES

Better Things for Better Living ... *through Chemistry*

Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
October 28, 1960

Far more than the presidency and vice-presidency will be at stake Nov. 8.

There will be some new faces in Washington regardless of whether Kennedy or Nixon wins the election. Several dozen top administrative jobs —and scores of lesser ones—will be up for grabs after the votes are counted. And the men who get the jobs will have key roles in setting oil and gas policies for the next administration.

The present GOP Cabinet, for example, will undergo some shuffling even under Nixon. There is rising speculation that Interior Secretary Fred A. Seaton would be switched to a new job, perhaps Agriculture Secretary. Names being mentioned as his successor include Mark Hatfield, governor of Oregon, and Cecil Underwood, governor of West Virginia. Also in the running would be Elmer Bennett, now Interior Under Secretary and the department's strong man on oil imports. Atty. Gen. William P. Rogers would stay on—probably in a new job, however.

Kennedy, of course, would use the new broom policy and sweep out almost all Republican appointees. Resignations would be officially tendered and he would accept most of them without hesitation. Some oil policymaking jobs might be excepted. however. In the Interior Dept., Matthew V. Carson, Jr., as head of the Office of Oil & Gas, and Imports Administrator Lawrence O'Connor, are not political appointees in the usual sense. But the odds, in the final analysis, are that they would be replaced in a Democratic administration.

A guessing game for Kennedy's potential cabinet is already under way. At the moment, even Kennedy's big backers can't count on particular jobs, should he win. These decisions won't be made until after the elections. Some names being kicked around are Rep. Stewart Udall (D., Ariz.) and Sen. Clair Engle (D., Calif.) as possibilities to head a Democratic Interior Dept. Gov. Abe Ribicoff, of Connecticut, is looked upon by many as the next Attorney General should Kennedy gain the White House.

•

Look at the U.S. export crackdown on Cuba. One aim is to hamper operation of seized oil refineries. The Washington action is aimed at banning sales by U.S. exporters of many items Cuba's Castro needs. Included are vital machinery, replacement parts, and special oils and lubricants essential to refinery operations. Catalytic gel, which the seized Esso refinery needs for cat-cracking operations, is on the prohibited list.

The obvious goal: industrial and economic collapse of the Castro regime. Washington's policy toward Cuba has now hardened. Any retaliatory steps short of military intervention are now considered justified.

How effective will the export curbs be? Canada, Europe, and certainly the Communist Bloc will continue to supply Cuba with some needed goods. U.S. trade experts think Castro may be able to hold out for some months, but not indefinitely.

•

The Interior Dept. finds itself partly hamstrung on the new helium program. Congress won't authorize any funds until next year. All that Interior can do, meanwhile, is line up potential helium operators.

Emphasis on Secondary Recovery Jumps in Texas

Projected recovery in million bbl. for projects proposed in first nine months

Secondary recovery projects requested in Texas in the first nine months of this year are expected to yield an estimated 554,645,507 bbl. of oil—almost triple the estimate for the projects sought in the same period last year.

Last year, 188,934,938 bbl. was the estimate of additional oil to be recovered from projects proposed in the first nine months (PW—Nov.6'59, p35).

The projects are located in 10 of the 11 Railroad Commission districts —all except District 2.

There appears to be an emphasis on individual project bigness this year.

The total number of projects—263 in 70 counties—is pretty close to last year's total of 254 in 58 counties, but there are more big projects this year.

It's estimated that the biggest ten, for example, will yield 377,066,522 bbl. of additional oil (table, below)—almost twice the total estimate for last year.

Altogether, 17 projects were proposed in the first nine months this year with estimated recoveries of 5-million bbl. or more. In contrast, only the top six floods last year were estimated at recovering more than 5-million bbl. each.

Much of the increase in anticipated secondary recovery production can be attributed to the Spraberry Trend of West Texas.

The three biggest of the four Spraberry projects proposed through September this year are estimated to have a total secondary production of 186-million bbl. The fourth Spraberry project will add only 430,000 bbl. of additional oil.

North Texas (District 9) is the leading Railroad Commission district in number of projects proposed, with 109.

This is two more than had been proposed for this district in the same period last year.

Wichita County, although leading the state and the district with 22 projects, is nine below last year's total at this time.

Archer County is again second in both categories, with 21 projects, an increase of three over the same time last year.

Young County follows with 15;

Ten Biggest Texas Secondary Recovery Projects Proposed

(First nine months of 1960)

Field	County	Operator	Lease or Unit	Original oil in place (bbl.)	Estimated additional recovery as result of projects (bbl.)
Spraberry Trend	Glasscock, Upton, Midland & Reagan	Sohio	Driver unit	625,000,000	138,000,000
Welch	Dawson & Gaines	Cities Service	field unit	268,000,000	45,000,000
Claytonville (Canyon Lime)	Fisher	General Crude Oil	Claytonville unit (Canyon Lime)	125,000,000	41,148,000
University Block 9 (Wolfcamp)	Andrews	Atlantic	field unit	51,000,000	40,000,000
Spraberry Trend	Midland & Upton	Humble Oil	Midkiff unit	(not given)	29,000,000
Sherman (7,500 ft.)	Grayson	Standard Oil of Texas	Baker Sand unit	104,000,000	26,000,000
Spraberry Trend	Reagan	Southland Royalty	Aldwell unit	130,000,000	19,000,000
Hull-Silk-Sikes	Archer	Blackwell Oil & Gas	3,800 & 4,300 ft. reservoirs	115,900,000	17,002,000
Dora Roberts (Devonian)	Ector & Midland	Cities Service	field wide	42,063,000	12,466,522
Johnson	Ector	Cities Service	Johnson Grayburg San Andres	45,750,000	9,450,000

TUBINGLESS COMPLETIONS

Baker has developed a complete new line of products for completions using tubing as small-diameter casing.

The picture shows some of these new products. The complete line very nearly parallels the entire Baker line of conventional-size products.

The line includes: Primary Cementing Equipment (shoes, collars, centralizers, scratchers, turbulizers); Remedial and Stimulation Tools (treating packers; both retrievable and drillable bridge plugs); Production Tools (retrievable and drillable production packers; casing pump packers, tubing anchors).

Many of these new Baker Products are not yet available in quantity, nor in all areas.

Tubingless Completions are becoming more numerous. Our own engineering and development programs continue as Baker keeps alert to the trends—ready to provide the practical and dependable new tools that will further improve tubingless completion methods and techniques.

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Please ask your Baker Man for Technical Bulletin 378, or write to Baker Oil Tools, Inc., Box 2274, Terminal Annex, Los Angeles 54, California

BAKER

BAKER OIL TOOLS, INC. / HOUSTON / LOS ANGELES / NEW YORK

LOOKING UP—Length of drill starts into the hole after change of bits. Falcon Seaboard Drilling Co. of Tulsa is drilling this well with a 9,500-foot string of Pittsburgh Seamless 4½-inch Grade E drill pipe. Falcon Seaboard has used Pittsburgh Steel tubular goods and an independent distributor for many years with pleasing results.

Pittsburgh Steel's Independent Distributors...

PUT THIS IN YOUR PIPE---SERVICE!

Drillers who use Pittsburgh seamless on well after well have a lot more than dependable drill pipe, casing and tubing going for them.

They have what Falcon Seaboard Drilling Co. of Tulsa calls "fair treatment from the mill" and—independent distributors who go more than the proverbial extra mile to provide service.

Boone Smiley, manager of the Mid-Continent Area for Falcon Seaboard, said:

"We've used Pittsburgh Steel's independent distributors through the years in times of short supply and when pipe was readily available. We've always felt that Pittsburgh Seamless did a job for us and the mill has always been fair."

Photographs on these pages show effective results of the close relationship between drillers and operators on one side and a Pittsburgh Steel independent distributor on the other. Here, near Maysville, Okla., Falcon Seaboard is using 9,500 feet of Pittsburgh Seamless 4½ inch O.D. Grade E Drill Pipe on the fourth well the string has drilled in the area in recent months.

The independent who supplied this drill string to Falcon Seaboard sold the first string of oil country tubular goods manufactured by Pittsburgh Steel. Continued progress through the years has been based on *service* to the trade.

"We can't afford to get lazy," declared William G. Rudd, the distributor's sales manager. "The oil business is always subject to critical emergencies and they all have big dollar signs. It's up to us to pitch in and help."

As a case in point, during periods of acute shortage, this distributor set up a service called the Mid-Continent Pipe Exchange. As a free service to the industry, oilmen were polled for tubular material which they wished to swap for goods more strategically located, or more suited to their needs.

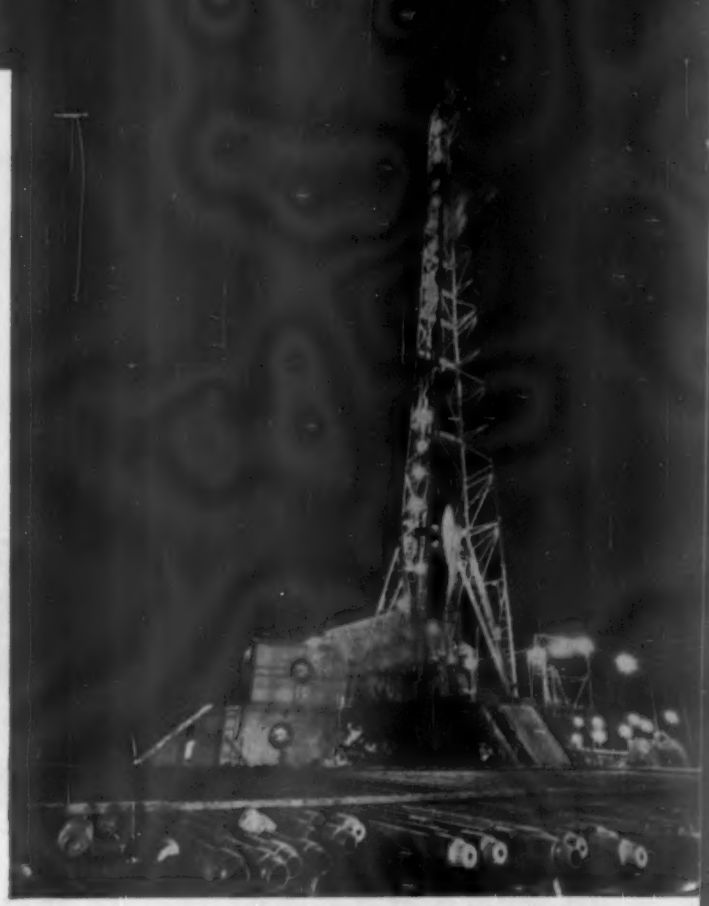
This extra service by Pittsburgh distributors is matched by the extra stamina you always get in Pittsburgh Seamless Drill Pipe—a stamina which stems from long experience in making special steels for the special jobs in the oil country.

When you buy your next string of drill pipe, or when you're ready to run casing or tubing, remember the combination of Pittsburgh Steel Co. and independent distributors offers you the kind of service—plus the utmost in dependable seamless tubular goods—that isn't available any other place.

It's easy to get lined up with an independent. They're listed at right. Call the nearest one today for quality seamless tubular products.

LOOKING DOWN—On monkey board of 131-foot, A-mast rig, roughneck gets joint of Pittsburgh Steel Co. drill pipe ready for re-entry during a trip. The 9,500 feet of drill pipe shown at top and on racks below was used to drill three previous wells.

Driller Oliver Clark, left, chats with Max Thomas, distributor's representative, and Jewel Smith, Pittsburgh Steel field engineer.



Falcon Seaboard Drilling Co.'s No. 35 rig is at work here on a Sunray Mid-Continent lease near Maysville, Okla.

Geolograph on same rig shows hole is at 4,296 feet with the rotary table, seen at right, operating smoothly. Geolograph chart indicates driller is midway between joint connections.

Distributor Home Offices

Bennett Supply Company Midland, Texas
Atlas Bradford Company Houston, Texas
Buckeye Supply Company Zanesville, Ohio
C. W. Cotten Supply Company Tulsa 5, Oklahoma
Franklin Supply Company Denver 10, Colorado
Houston Oil Field Material Co. Houston, Texas
Industrial Supply Company Wichita Falls, Texas
Iverson Supply Company Tulsa, Oklahoma
Longhorn Supply Co., Inc. Houston 14, Texas
Lucey Export Corporation New York 7, New York
Lucey Products Corporation Tulsa 19, Oklahoma
McJunkin Corporation Charleston 22, West Virginia
Midland Supply Company Wichita 7, Kansas
Mountain Iron & Supply Co. Wichita 2, Kansas
The Producers Supply & Tool Co. Fort Worth 2, Texas
Production & Refining Equipment Company Odessa, Texas
Sandy Supply Company Wooster, Ohio
Southwest Supply Company Pittsburgh, Pennsylvania
The Straker Supply Company Jackson, Michigan
Superior Iron Works & Supply Co. Shreveport, Louisiana
Tex-Tube, Inc. Houston 7, Texas
Western Supply Company Tulsa 1, Oklahoma

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Steel

Clay with 12, and Wilbarger and Jack with 9 each. Six other counties in District 9 have from 1 to 7 projects.

West Central Texas is next with 71 projects.

Callahan County leads this district —7B—with 18 projects proposed. Next come Shackleford with 13 and Jones with 10. The remaining 12 counties have from 1 to 8 projects each.

West Texas—Districts 7C and 8—follows with 65 projects in 24 counties. Of these, 56 are in District 8.

Ward again this year has 10 projects proposed, to lead the area. Winkler County is second with 8, and Andrews is third with 5.

Of the remaining districts, District 10 leads with 12 projects. Eight projects have been proposed for Hutchinson County and four for Gray County.

The other districts and projects proposed are: District 1, three; District 2, none; District 3, four; District 4, three; District 5, one; and District 6, three.

Thirteen of the projects proposed for the state overlap into more than one county. Ten projects involve two counties; two involve three counties; and there is one project—Sohio's Driver Unit—that involves four counties.

Almost all forms of injection are involved in the projects proposed.

Waterfloods are by far the most popular, with 246. Pressure maintenance by water injection is next, with 8 proposed projects.

The number and type of the others are: gas injection, two; pressure maintenance by gas injection, two; miscible flood, two; carbonated waterflood, one.

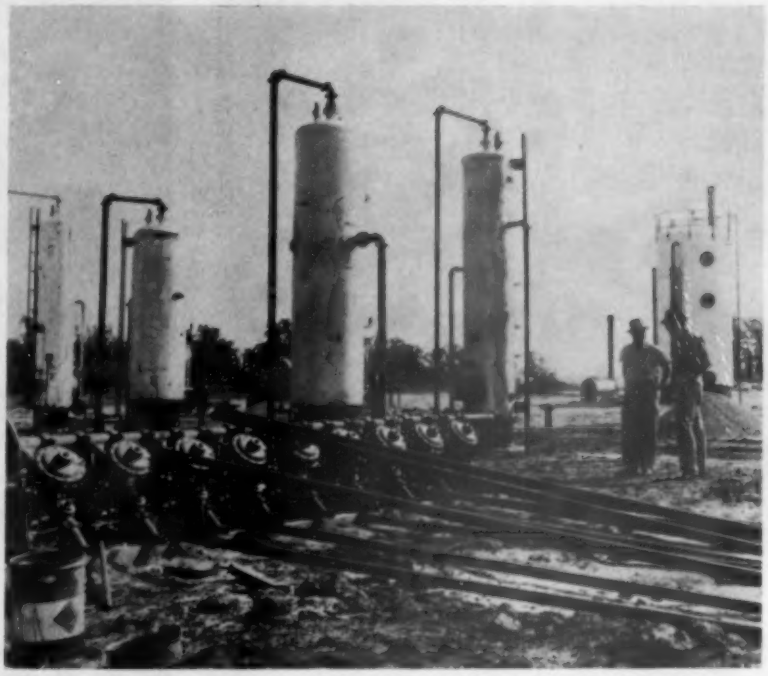
In addition, there are two projects in which the proposal calls for both pressure maintenance by gas injection and by water injection.

A peak of secondary recovery requests was reached last June, just before the Railroad Commission hearing to consider proration of production from waterflood and pressure maintenance projects.

The five biggest of the projects requested in the last few days before the hearing were estimated to have a total increase in oil recovery of 28-million bbl.

At the hearing, producers generally agreed on having some restrictions imposed on secondary recovery projects, but differed as to the specific methods.

There was virtual unanimity on the idea that secondary recovery projects be given unit allowables. The operator, therefore, would be free to produce as many wells as he wished.



OIL LINES feed into satellite production station in Northeast Purdy field, Oklahoma.

Activity Moves Into High

Limited water injection has begun, and full-scale operations will begin before year-end, in the initial development area of Oklahoma's Northeast Purdy Unit, the Mid-Continent's largest waterflood in terms of areal extent.

The unit, which encompasses 35,000 reservoir acres, involves property held by 3,500 individual royalty owners and 264 working interests.

Cities Service Oil Co. (Del.) was elected to serve as unit operator on a coordinated basis at an organization meeting held Oct. 21, 1959.

The unit came into official being Dec. 1, 1959.

Besides Cities Service, other dominant working interests are held by Phillips, Superior, Magnolia, Vickers, Pan American, Amerada, Sunray Mid-Continent, Ohio Oil, Oklahoma Natural Gas, and Republic Natural Gas.

More than $19-million will be invested in a bid to recover many millions of additional barrels of oil from the three-unit field.

This year's budget calls for the expenditure of nearly $6-million.

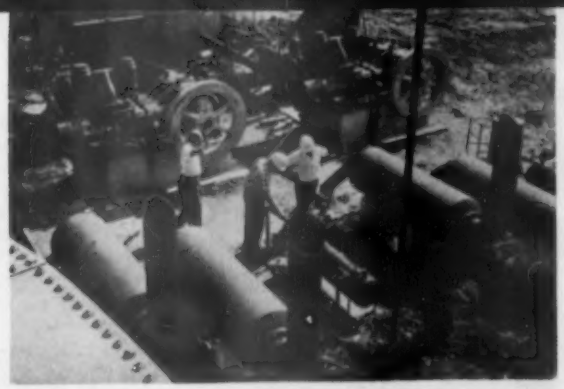
Heavy construction activity has marked the first year of the unitized operation in Garvin County.

Here's what's been done in the field since January:

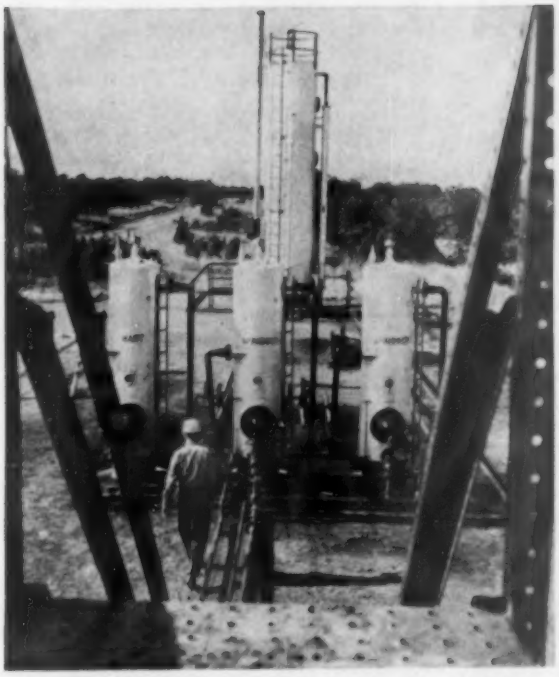
- Four supply wells have been drilled and equipped, while another has been provided through the conversion of an existing oil well.
- One of four proposed water-processing plants already is in operation, and two more will be completed by late November. The final plant will be completed early next year.
- A total of 97 gas wells have been shut in to conserve reservoir energy, and 22 oil wells have been temporarily shut down.
- Nineteen producing wells have been converted for injection purposes, and water is currently being injected into 16.
- A water-distribution system consisting of 27 mi. of cement-lined steel pipe has been completed.
- New lease roads have been graded, and a unique method of well identification put into effect.
- Seven automatic custody transfer units and most of 46 proposed satellite stations have been installed. Custody transfer automation will be complete by year end.

It's expected that waterflooding will unlock some 85-million bbl. of oil which would have remained in place under primary production.

J. R. Hatfield, technical advisor to the manager of production for Cities Service, and chairman of the Northeast Purdy Operators' Committee, estimates that 45% to 50% of the initial oil in place will be recovered by



GAS ENGINES and exhaust snubbers are at water-injection site.



TREATING FACILITIES like these are now being replaced.

ACT UNIT section is unloaded from truck at the field.

Gear at Northeast Purdy Waterflood

primary and waterflood production. Estimated flood life if approximately 16 years.

"Total production from all zones in the entire unitized area immediately prior to the instigation of waterflood activities approximated 15,200 b/d," Hatfield notes.

"Under secondary recovery, it is anticipated that total daily production will reach approximately 26,980 bbl. by 1965, and thereafter decrease gradually to a daily production level of 19,787 b/d by 1970.

"By comparison, it is estimated that production from all zones would have declined to about 4,000 b/d by 1965, and to 1,600 b/d by 1970, had primary production practices been continued."

The unitized area will actually be produced as three separate units, each covering a separate reservoir.

This is so because production in Northeast Purdy is from the Hart, Springer "A," and Springer "B" zones of the Pennsylvanian.

The Hart, topped at depths ranging from 7,050-500 ft., underlies 22,400 acres of the unitized area. This area now contains 356 producing oil wells, 20 producing gas wells, 85 shut-in gas wells, and 18 temporarily shut-down oil wells.

The Springer "A" zone, topped at depths of 7,600-8,500 ft., has an areal extent of some 10,000 reservoir acres, currently containing 219 producing oil wells, 17 injection wells, 10 shut-in gas wells, and 1 temporarily shut-down oil well.

The Springer "B" zone is topped at depths of 8,050-600 ft. It underlies 2,500 acres containing 58 producing oil wells, 3 input wells, and 3 temporarily shut-down oil wells.

Figures show that production from the Hart zone peaked at 16,600 b/d in April, 1957, only five years after the reservoir was discovered.

The Springer "A" zone, discovered a year earlier, attained peak production of 16,500 b/d in February, 1956, and the Springer "B" zone peaked at 4,600 b/d in April, 1957. Primary production from all zones has been on a gradual decline since these peaks.

It's anticipated that 125 to 160 of the unitized area's original 247 producing wells (counting dual completions as two) ultimately will be converted for water-injection purposes.

An inverted nine-spot pattern is being utilized for the initial development area, with dual input wells being used in each instance where Hart and Springer zones overlap.

If the desirability of such a move is indicated by subsequent reservoir performance, the overlap area will be developed on a five-spot pattern, and a portion of that area underlain by the Hart reservoir alone may undergo similar development.

Water for injection will be obtained from five deep supply wells. It will be produced by submergible centrifugal pumps set opposite perforations at roughly 5,100 ft.

Some 5,000 b/d of water supplied by these wells already is being injected, and full-scale injection in the initial development area will be under way by the end of this year.

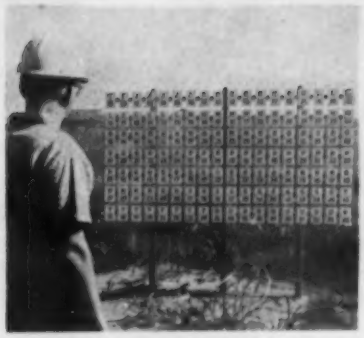
The supply wells are more than adequate to fulfill water requirements approximating 400 b/d per input well in the Hart zone and 600 b/d per input well in the two Springer zones.

Four water plants will process the water for all three of the Northeast Purdy zone units.

Each plant is of the closed-system type, and includes standard fixed-bed filtering processes. High-pressure pumps driven by gas engines are situated at each plant site to drive water through the supply lines to the injection wellheads. Injection pressures of about 1,100 psi. are anticipated.

All produced liquids are to be routed through gathering lines to one of the 46 satellite stations, thence to one of the seven automatic custody transfer units.

Headers at each satellite station receive crude from 17 to 19 wells. Cas-



UNIQUE WELL DESIGNATION signs are located at each lease road crossing.

inghead gas is separated from the liquids at the satellite stations, and gathered direct from these points by the purchasing company. Phillips and Warren are taking all gas—both gas well and casinghead.

Also located at each satellite station will be test facilities for each well coming into the header. One well will be on test at all times, so that each well is periodically tested at least once each producing month.

Continuous testing will be accomplished at the onset by manual switching, but subsequent plans include the installation of automatic timing devices. Switches are being installed on all header valves so that minimum effort will be required in the tentative changeover from manual to automatic control.

Each test unit includes a small water breakout device, which makes possible the quantitative metering of oil and water being produced by the individual wells. This information is permanently recorded on strip charts during the periodic test cycles.

Following gathering, gas separating, and individual well metering at each satellite station, produced liquids are transmitted via pipeline to one of the ACT units.

All flow lines are of welded steel construction, and those serving the Springer units are being internally plastic-coated in place to reduce paraffin accumulation.

Heater-treaters at each ACT facility break out produced water and basic sediment and water. Free water is then piped back to a processing plant where it is filtered and reinjected.

From the heater-treater, crude goes direct to positive displacement metering devices, where it is sampled and run to the pipeline. Oil that does not meet pipeline specifications is recycled through the treating equipment.

A unique arrangement incorporating use of two positive-displacement meters at each ACT installation satisfies pipeline requirements, and makes possible direct runs to pipelines.

Crude weathering time is thereby reduced to a minimum of two hours, resulting in relatively little gravity loss.

Each PD meter acts as a check against the other. One is equipped with a temperature-compensating device, which gives volume readings corrected to 60F, while the other indicates gross throughput. Another device records the actual temperature at which the oil was run. Any inaccuracies resulting from breakdown of the temperature compensating device can thus be adjusted by averaging out actual temperatures on the second meter.

A flow rate sensing device shuts down incoming production at any given ACT installation in the unlikely event of total meter failure.

Since Hart and Springer oil must be metered separately, three of the ACT installations, situated in overlap areas, contain ACT devices for each zone. One ACT installation meters only crude from the Hart.

Four pipelines—Service, Magnolia, Mid-Continent, and Cities Service—take crude from Northeast Purdy. Only one pipeline can receive crude from an ACT installation at any given time. Switching is manual. Crude from the ACT installations is delivered to pipeline suction by rotary pump.

A method of well identification has been devised that enables all operating personnel, both in the field and in the office, to know the precise location of each well.

The entire unitized area has been divided into 40-acre blocks, each corresponding to a well location. Each of these blocks has been assigned an alphabetical (east-west) and numerical (north-south) designation.

These designations will be used for all future references to individual wells, supplanting the usual cumbersome system of describing each by individual well and lease number, and lease ownership.

Mounted on prominent signposts at lease road junctions throughout the area are small printed blocks corresponding to the wells that can be reached via a particular route (picture, left).

To further simplify identification problems, satellite stations in overlapping areas are designed and laid out alike—Hart operations always being to the right, and Springer operations to the left.

Pump-Off Control Is Automatic

A control system that is said to provide a practical method of stopping an oil well lift pump automatically whenever a well pumps off ("dry pumping"), has been introduced by Cutler-Hammer, Inc.

The device represents 2½ years of laboratory research and field testing, the Milwaukee company says.

Results show, the company adds, that the pump-off control can cut pumping time up to 25%, thus assuring maximum production even on troublesome, erratic wells. At the same time, it eliminates needless mechanical wear and shock, thereby increasing equipment life.

The automatic pump-off equipment is basically a simple flow meter.

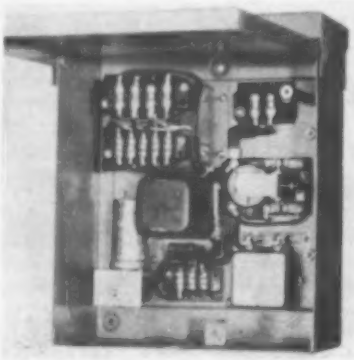
The new unit consists of an electronic controller connected to an electrically self-heated thermistor probe, which monitors fluid flow from a well.

The probe element is installed in the lead line between the wellhead and the first check valve. The pulsating flow of fluid, delivered with each stroke of the lift pump, results in electrical signals from the probe.

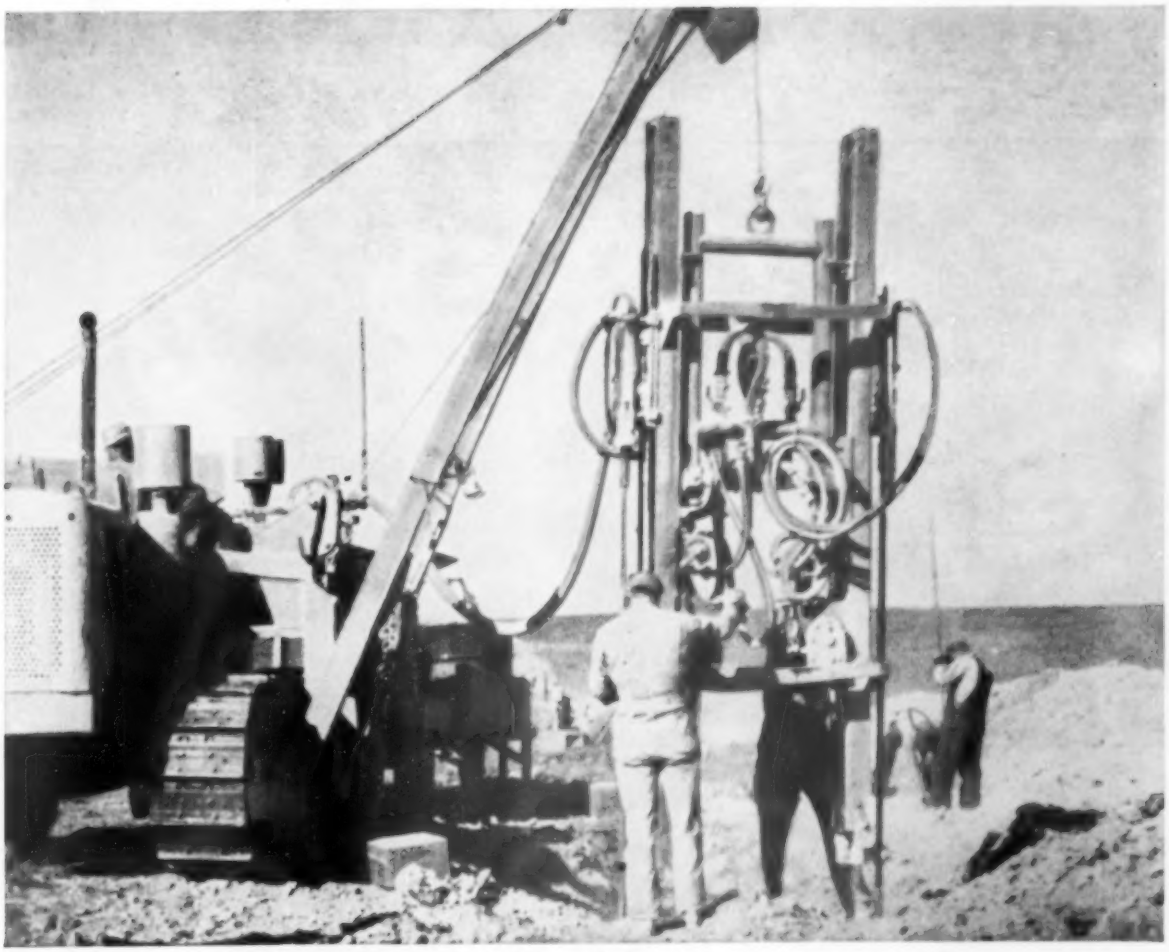
Upon pump-off, the fluid flow diminishes and a corresponding reduction in the signal from the thermistor occurs. This signal reduction activates a transistor-controlled relay, which stops the pump.

The pump-off control is designed to operate under a wide range of field conditions.

Since the controller senses pump-off by direct measure of fluid production, outside factors have no influence on its operation. The result, says Cutler-Hammer, is a device suitable for application with any electrically powered reciprocating pump.



TRANSISTOR-CONTROLLED RELAY stops pump on signal from thermistor.



Gardner-Denver "TWINDRIL"® and RP600 portable compressor combination makes quick work of blast-hole drilling along this section of the pipeline.

Gardner-Denver helps put spreads ahead of schedule on 2000-mile pipeline project

Transwestern Pipeline Company and Pacific Lighting Gas Supply Co. are bringing Texas and Oklahoma gas to the Greater Los Angeles Basin through a new 2000-mile pipeline. On the job, 89% of rock drill rigs and 69% of portable air compressors at work were Gardner-Denver.

The pipeline is bedded down beneath some of the toughest terrain in the Southwest. The line was ready for operation months ahead of the original target date.

From Fort Stockton, Texas, to the Pacific Coast, Gardner-Denver portable air compressors and pipeline rock drills helped set the pace through miles of solid rock as the pipeline spreads moved westward.

Gardner-Denver equipment at work—Eight contractors used a total of 55 portable air compressors on the project. Thirty-eight of these—or 69%—were Gardner-Denver. They used 55 rock drills. Forty-nine of these—or 89%—were Gardner-Denver.

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Patent Applied For

Hydrazine Cuts Casing Corrosion

The roughly $10-million lost by the petroleum industry each year because of external casing corrosion may be reduced significantly with the use of oxygen scavengers.

This is the conclusion of F. W. Schremp and J. F. Chittum, California Research Corp., and T. S. Arczynski, Standard Oil Co. of California, Western Operations, Inc.

The researchers noted that estimates of the cost of repairing casing leaks caused by external corrosion may exceed $4-million a year and that well damage and lost production resulting from such leaks probably cost another $5-million to $6-million yearly.

The trio outlined causes of such corrosion and results of lab and field tests of an oxygen scavenger at last week's meeting of the California Region, Society of Petroleum Engineers of the Institute of Mining, Metallurgical & Petroleum Engineers in Pasadena, Calif.

A study points to four types of external casing failures—water-line, casing-casing, collar, and body failures. All are caused by highly-localized corrosion attack.

These types, the researchers said, are identified largely by their location on the casing.

Water-line failures are found just below the surface of water or mud in the casing annulus. Casing-casing failure occurs on the oil string just below the shoe of the surface string. Collar failures are found in the threaded ends of casing joints where they are screwed into casing collars. And body failures may occur at any point on the body of the casing joint.

The researchers noted that examination of a casing failure does not always reveal the cause of the failure. Necessary details are frequently destroyed when the failure occurs. One way to obtain information about a failure, they continued, is to study the nature of other pits on the casing in the vicinity of the failure.

Laboratory studies show that water-soluble reducing agents, such as ferrous chloride, ferrous hydroxide, powder iron, stannous chloride, and hydrazine, react with dissolved oxygen in alkaline drilling muds.

Investigation also showed that the potential of iron in such a system shifts in the anodic direction as oxygen is consumed. The trio added: "Complete removal of dissolved oxygen resulted in virtual cessation of corrosion."

Field tests of hydrazine support the laboratory findings that it is a convenient and effective oxygen scavenger for use in oil wells.

To date, the researchers reported, hydrazine has been used by the Standard Oil Co. of California to treat more than 200 wells.

They said that hydrazine effectiveness may be estimated from measurement of the amount of cathodic current needed to protect treated and untreated wells.

Consumption of available oxygen reduces corrosion and, thereby, reduces the amount of current needed to protect the well.

The Stancal field tests did show, they continued, that current requirements were "materially reduced" for wells treated with hydrazine. "This reduction of current requirements," they said, "is interpreted to indicate a substantial consumption of oxygen around the oil-string casing and a consequent reduction in external corrosion."

Other conclusions from the field tests were drawn:

- Hydrazine appears to achieve maximum effectiveness during the first 12 to 18 months after well treatment. Hence, a significant amount of corrosion is prevented early in the life of the well when differential oxygen concentration cells are most active and likely to cause pitting corrosion.
- There is no significant reduction in effectiveness of hydrazine even after use in wells for three to four years.

California Waterfloods Increase

Waterflood projects in California have risen sharply—66⅔%—in the past two years.

This was revealed last week by N. van Wingen, University of Southern California, and B. L. Melkonian, Tidewater Oil Co., who made a study of the state's waterflooding operations.

The two presented their findings to the California Regional meeting, Society of Petroleum Engineers of the American Institute of Mining, Metallurgical & Petroleum Engineers in Pasadena.

As of June 1, 1960, they said, there were 55 active waterflood projects in the state compared with 33 in 1958. There are 14 other projects involving pressure maintenance by water injection.

Waterflooding was first started in California in 1944 and picked up impetus in 1951, they added, when crude demand began exceeding the state's supply.

The 55 waterflood programs in effect this summer encompassed 322 injection wells into which water was being injected at a rate of 497,895 b/d.

The injection rate per project ranges from 115 b/d to 47,300 b/d with the average being 9,100 b/d.

Up to June 1, 1960, a total of 381-million bbl. of water had been injected into the 55 projects.

Wilmington field alone accounts for 48% of the state's total current water injection.

Wilmington's share in 1955 was 5%.

The high rate at which water injection has been increased at Wilmington, they said, is due largely to the fight against subsidence in the Wilmington area.

Excluding Wilmington, the state's water injection increase has been at approximately 30% each year since 1957.

The problem of great zonal thickness and the accompanying permeability heterogeneity—once considered a barrier to successful water-flooding—has been largely overcome.

This has been done, van Wingen and Melkonian reported, by selectively perforating only certain portions in injection wells or by means of multiple packers and Camco valve installations.

Spinner surveys and/or thermometric methods are the common means by which California operators have been determining injection profiles in the waterflood projects.

Current water injection is at depths ranging from 500 ft. to 9,300 ft. for an average of 3,800 ft.

The thickness of perforated zones ranges from 50 ft. to 800 ft., averaging 390 ft.

Some 18 projects have injection depths of from 3,000 ft. to 3,999 ft. The next most popular depths are 4,000-999 ft. and 5,000-999 ft. with 10 projects each.

The California projects generally have a lower injection pressure gradient than in other parts of the country because of the friable nature and high permeability of the sands.

Surface injection pressures range from gravity flow to 2,200 psi.

The average pressure applied to the sand surface in injection is 0.69 psi. per foot of depth.

What's New / IN EXPLORATION, DRILLING, PRODUCTION

AAPG Head Urges AGI Reorganization

The president of the American Assn. of Petroleum Geologists believes it should switch from a scientific to a professional base of organization if member societies of the American Geological Institute reject plans for AGI reorganization.

Ben H. Parker, AAPG president, who has strongly supported plans to revamp the AGI to give earth scientists their own professional organization, said many of the problems now besetting the geological profession would be ironed out if a professional group existed.

Parker, vice-president of Frontier Refining Co., told the Dallas and Ft. Worth Geological Societies last week: "If the AGI's member groups decide not to go along with the proposal, I, for one, feel that the AAPG should change its base of organization and turn from a scientific to a professional organization."

The reorganized AGI would have tight code of ethics and membership rules that would help identify and protect qualified geologists (PW—Mar.18'60,p40).

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Soviets Say Bottlenecks Hold Up Electrodrill Use

The Russians say their electrodrill has proved superior to the turbodrill in speed and economy of operation but that bottlenecks are preventing widespread use of the electrodrill.

A report in Pravda, the official Communist party organ, says that more than 1.3-million ft. of experimental and test drilling has been carried out with the electrodrill.

The article said that a large share of the blame for failure of the electrodrill to find wider use can be laid at the door of Gosplan (the government planning agency) for failure to provide for and enforce timely delivery of the necessary components and accessories.

Pravda reported that the Kharkhov electrobuilding plant, for example, last year announced it had "mastered" production of electrodrills with a 170-mm. diameter. The first six machines were sent recently to Tuimaxy for field tests—but not one of them could be used because the proper drill pipes, cable clutches, coupling locks, and other components were not available.

Several plants making components for the electrodrill were rapped for their failures in the Pravda article.

•

Operators in two areas have been warned by the West Central Texas Oil & Gas Assn. that they face compulsory measures to halt salt-water pollution unless they act voluntarily.

Sam L. Robertson, association president, named the pools as Sharon Ridge in Scurry County and Coleman Ranch in Mitchell County.

The pools are within the Colorado

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River Municipal Water District, which is planning a new lake in south Mitchell County to provide a new water source. Robertson said plans for the lake are being "stymied" because of salt water pollution.

•

The American Assn. of Oilwell Drilling Contractors has announced membership of a sound practices committee authorized recently.

William P. Clements, Southeastern Drilling Co., Dallas, will be chairman. Members are Mark Gardner, Delta Drilling Co.; Jack Abernathy, Big Chief Drilling Co.; R. C. Tucker, Great Western Drilling Co.; and Max E. Peden, True Drilling Co.

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A total of 50,623 acres has been sold in one of the biggest oil and gas lease sales in recent months by New Mexico's Land office.

The sale netted $435,750. High oil bid was $45,000 by Sunray Mid-Continent Oil Co. for a 40-acre tract in Lea County, 10 mi. northwest of Lovington.

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Dallas Oil of Texas Inc. has acquired exploration rights on 6-million acres in Australia.

The acreage, acquired from Hackathorn Oils Ltd., Denver, is in the Canning Basin, west Australia. It is part of 128-million acres that the Hackathorn company holds in Australia.

A spokesman said the transaction involved a cash consideration plus agreement to drill an 8,500-ft. test in 1961.

•

Kutz Cannon Oil & Gas Co., Denver, and King Oil Co., Wichita Falls, Tex., are working out procedures for eventual merger.

K-C has just contracted with King to acquire a working interest in 16 oil wells in Tillman County, Okla., in a stock exchange.

In addition, R. A. King, president of King Oil, has been elected to the K-C board of directors and executive committee.

•

Engineering

Pan Geo Atlas Corp. says its Sata Log is particularly valuable in fresh water sands and in reservoirs which contain enough shale and salt water to cause low resistivity readings on electrical logs.

The log exhibits two curves, one of which is the attenuation of the acoustic signal (SA) between two receivers. The other is the transmission amplitude (TA) of the acoustic energy at the first receiver.

Pan Geo says distinct acoustic properties of hydrocarbons enable this log to distinguish between gas, oil, and water on a qualitative basis in both high and low porosity media.

•

Drilling Highlights

Oklahoma—Cleary Petroleum No. 1 Hilltop, section 16-8n-5w, Grady County, flowed 30.5-million cf/d of gas open flow, and 6-million cf/d of gas and 629 b/d of condensate through 21/64-in. choke and perforations at 11,715-65 ft. and 11,773-810 ft. in the Bromide sand. The wildcat is 7 mi. west of oil production and 22 mi. north of gas-condensate production at Bradley field.

In Woods County, Panhandle Development Co. No. 1 Urban, section 35-26n-17w, flowed gas at the rate of 20-million cf/d through perforations at 5,827-37 ft. in the Cherokee formation. The test is 7 mi southwest of Teagarden pool.

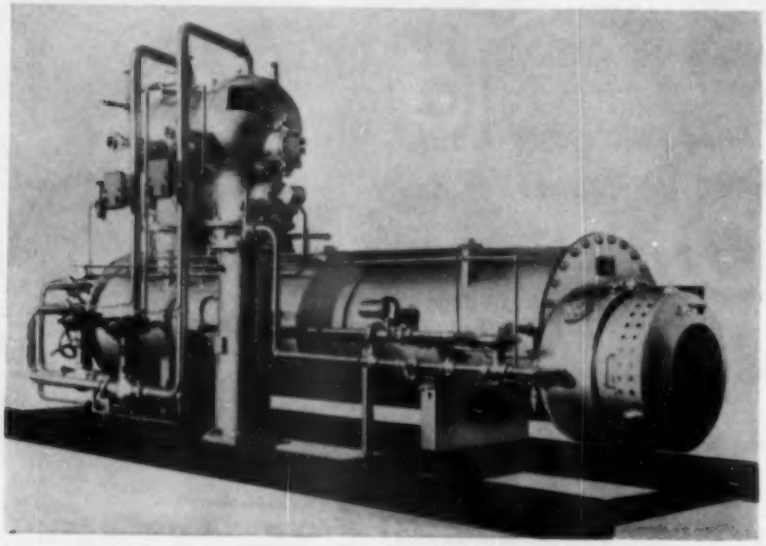
North Dakota—Skelly Oil Co. No. 1 T. H. Anderson, section 26-152n-96w, McKenzie County, was completed for 218 b/d through 12/64-in. choke and perforations in the Mission Canyon, topped at 9,272 ft. The well is 1 mi. east of Clear Creek field.

New Mexico—Standard Oil of Texas No. 2 Vacuum Edge Unit, section 4-18s-35e, Lea County, was completed for 240 b/d of 40-gravity oil through ½-in. choke and perforations at 8,650-720 ft. in the Abo, topped at 8,286 ft. Nearest Abo production is 11½ mi. west in the Corbin field.

In Rio Arriba County, Kay Kimbell No. 1 Liberman, section 5-25N-7W, flowed 1.9-million cf/d of gas through perforations at 6,584-796 ft. in the Dakota. Nearest Dakota production is 6 mi. northeast, at South Blanco field.

South Louisiana—Superior Oil Co. No. 1 R. C. Millint et al, section 31-18s-17e, Terrebonne Parish, was completed for 5.7-million cf/d of gas and 31 b/d of oil through 9/64-in. choke and perforations at 16,684-94 ft. The discovery is 3 mi. southeast of Sunrise field.

Montana—Signal Drilling & Exploration, Inc., No. 1 Anderson, section 13-32n-53e, Sheridan County, was completed for 150 b/d of oil through 24/64-in. choke and notches at 7,749 ft. and 7,775 ft. in the Madison. The discovery is 2½ mi. northwest of the Dwyer field discovery, which produces from the Mission Canyon.



Unit Treats Dual Production Separately

This dual wellhead production unit, introduced by Black, Sivalls & Bryson, processes two separate wellstreams. The unit consists of two spherical separators integrally mounted on one indirect-fired heater. The heater has two separate flow coils and chokes. The wellstreams are heated, choke, then processed in the separators. A flash arrestor provides burner safety and eliminates flashback. The unit is skid-mounted and is said to provide trouble-free cold weather operation.

Kuwait Forms State Oil Company

BEIRUT—Kuwait has set up a national oil company that will participate in the offshore oil rights now open to international bids.

This was disclosed exclusively to PETROLEUM WEEK in Beirut by a highly-placed member of the Kuwait delegation attending the Second Arab Oil Congress last week.

The national oil company, he said, has just been established by decree of the ruler of Kuwait.

The Sheikh of Kuwait has set a partnership with the national company as a required condition for obtaining offshore rights.

The arrangements, the source said, would be similar to those of Iran's National Iranian Oil Co. with Italy's state-owned ENI group. That venture is a 50-50 partnership, but the Italian company bears all the exploratory risk. (Pan American International has a similar 50-50 partnership with NIOC. But unlike ENI, the U.S. firm also paid a bonus—$25-million—for its Iranian offshore rights.)

So far, seven companies have submitted firm bids for the new Kuwait rights, the source said.

Among them are ENI, Shell, Cities Service, and Atlantic Refining.

Bidding will close Nov 7, he added, and results will be announced around the end of November.

Kuwait's new National Petroleum Co. will be 60% government-owned.

The other 40% will be subscribed by private citizens. It is capitalized at $21-million.

It is set up as a potentially integrated operation within Kuwait.

It is authorized to enter three types of operations: exploration and development, refining, and domestic distribution.

The new company will take over all domestic distribution in Kuwait within four months, the source said.

This is now handled by Kuwait Oil Co., which for some time has wanted to transfer local marketing to local firms. KOC is the operating company for Gulf Oil and British Petroleum Co., who jointly hold all onshore oil rights in the Persian Gulf sheikhdom.

USSR Wants More of Europe Oil Market

(From PETROLEUM WEEK's Beirut Bureau)

BEIRUT—The Russians and the Italians—two newcomers to the Arab Oil Congress—served notice last week that they should henceforth be taken into account by oil exporting states and major companies—the Soviet Union's Sojuznefteexport as an exporter, and Italy's ENI as a consumer.

Both made belated debuts in the Congress with prepared statements timed for delivery during its hottest debate—on crude pricing.

The Russians' oil export agency warned that Russia is out to regain its prewar export market in Europe—and would prove to be stiff competitors.

In a lengthy statement, Evgenii Gourov, chairman of the oil agency, said the Soviets aim to regain their "rightful position" among oil exporting countries. In 1930-33, he said, the Soviet share of Western Europe's total crude imports was 19%. In 1956-59, it was only 4.4%.

Like all other exporting states, the Soviet Union is interested in selling at the "most reasonable" prices, Gourov said.

Nevertheless, he added, "we take into consideration that prices should not fall to a level that might disrupt the general price structure." Hence the oil exporting states' efforts to prevent possible crude price cuts "receives our full understanding," he said.

Charges from the Congress floor that Italy was hurting the Arabs by buying Soviet oil goaded ENI's chief delegate into replying that "a price advantage and export incentives" were behind the new ENI-Soviet deal.

This is a pact under which ENI will import a total 12-million tons of Soviet oil in 1961-64—and export industrial items of corresponding value (PW—Oct.14'60,p10).

The Soviet statement by Evgenii Gourov gratified oil company delegates by references to the free oil market and competitive prices.

"Our prices conform fully with current oil market prices," Gourov told the Congress. "It should not be forgotten that at present there is no unified world oil price, and there is no unified world oil market."

Speaking to PETROLEUM WEEK of discounts, Gourov said: "What can we do? The market is weak, competition is sharp. So we have to get the best possible prices.

Gourov advocated that there should be free markets, and not monopoly markets.

"In countries where a monopoly market exists, prices are high," he told PETROLEUM WEEK. "In Sweden's free market, we did very well for a while. Then our dear competitors Shell and Esso came in and cut our prices. Next door, in Denmark, in the same geographic location, with the same standards and freight rates, prices are still high. Why? Because Denmark is a monopoly market.

Gourov resents charges of undercutting, which he explains as simply competitive discounting. "In Switzerland," he said, "we are not able to sell our products because the companies are undercutting our prices.

"In Egypt's current negotiations for next year's crude requirements, our discount offer off the Ras Tanura price is not lower than Shell's discount offer. If we are criminals for undercutting, they too are criminals."

Gourov said his oil export agency is giving preliminary study to OPEC, the Organization of Petroleum Exporting States proposed at Baghdad recently, but that the topic has not yet come to top level attention.

"But I must say this," he added: "We cannot look at this problem exclusively from the seller's angle. We've got to look at it from the buyer's angle as well.

"If sellers establish their own group, one day we may find buyers also establishing their own group."

World Markets: Next Target For France's Sahara Crude

PARIS — French government-controlled producers with "leftover" Sahara crude are already moving to capture a share of world markets from Middle East and Venezuelan oil.

For the first time, they are showing up outside of France—both in Europe and in the Western Hemisphere. Their aim is to dispose of that part of their rising crude output in excess of the big share the international majors established in France have contracted to take, and the much smaller share they themselves will be able to use within France.

The first export sales of state-owned Sahara crude were made this year, to Cities Service and a German buyer.

The U.S. firm took one cargo, and a German dealer took 20,000 tons under a processing arrangement. In both cases, the seller was SN Repal, which owns a half-interest in the Sahara's Hassi Messaoud field.

More recently, 7½-million bbl. of the Sahara crude were offered to Uruguay for 1961-63 delivery under two separate bids, the first made on an international tender.

SN Repal offered 44-45-gravity Hassi Messaoud crude for $2.66 c.i.f., with shipments of 630,000 bbl. in 1961, 1,260,000 in 1962, and 1,890,000 in 1963.

The other offer was for identical volumes of 42-gravity Zarzaitine crude at $2.569 c.i.f. (PW—Oct.14 '60,p54). This bid was entered for Regie Autonome des Petroles, which controls a 65% interest in the Sahara fields near the Libyan border.

The competitive element in these offers is that they are payable in francs—instead of dollars or sterling like others, including one French offer of Middle East crudes.

That bid was made by Cie. Francaise des Petroles, the only French company with stakes in the Middle East. It also has a half-interest in the Hassi Messaoud field.

It offered Iranian and Qatar crudes for sterling or dollars, payable 20% immediately and 80% in one year.

Still more state-owned Sahara crude will be offered in world markets next year if present contract buyers in France exercise an option to reduce volumes agreed upon.

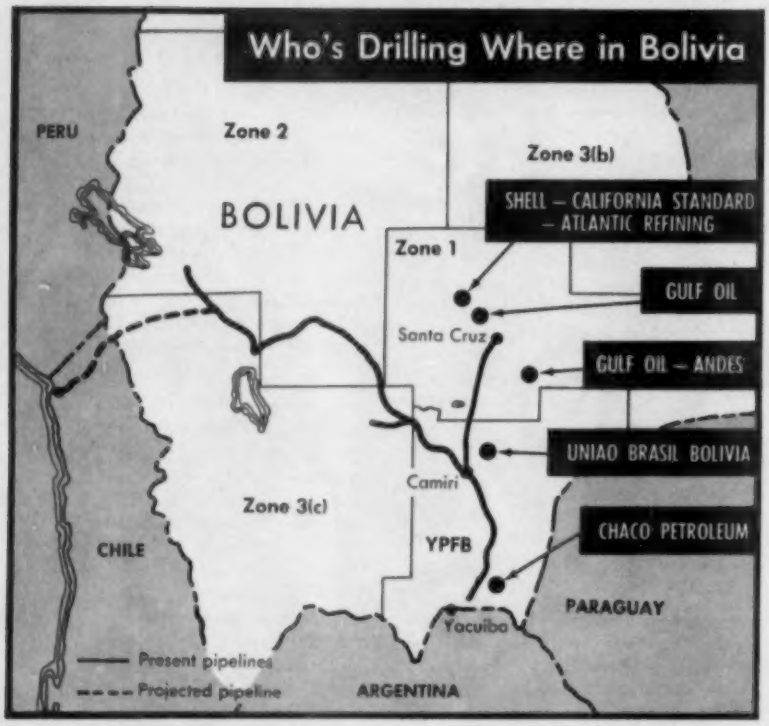
SN Repal's contracts contain a clause providing for a 10% reduction —or increase—at the buyer's option. The French affiliates of majors in France are most likely to take advantage of this to reduce tonnages of the high-priced crude.

At the same time, it looks likely that the Sahara producers will also move into refining—and marketing —competition outside of France.

The first step in this direction is the deal under which SN Repal and RAP will jointly rent a 14,000 b/d Belgian refinery and market product output in Holland and Germany, as well as Belgium.

Meanwhile, the price of Hassi Messaoud crude under contracts with buyers in France has been reduced uniformly, by 10¢ a bbl., to $2.49, now that last summer's Middle East price cuts have been equalized.

Gulf Oil Pushes Its Bolivia Search;



LA PAZ—Gulf Oil, heartened by its first Bolivian discovery, is pressing its drilling activity in this country on two fronts.

The discovery was made last month on the Caranda structure in Zone 1, where Gulf completed a 320 b/d wildcat. The well flowed 50-gravity through ¼-in. choke from 5,850 ft.

Gulf's producer was on concession acreage held by Bolivian Gulf Oil, owned 87% by Gulf Oil Corp., 7% by Falcon Seaboard, and 6% by Williams Bros.

Gulf has also drilled three unsuccessful tests on contract acreage it holds in the reserve zone of YPFB, the government oil company.

Gulf is now drilling a stepout 0.6 mi. north of the discovery.

Meanwhile, YPFB has moved two rigs to its own acreage near the Caranda structure to drill further tests for its own account.

Gulf also is getting ready to drill a wildcat on acreage held by a group of three American firms, under a joint-venture agreement now awaiting government approval.

Gulf meanwhile has moved in a rig for the test from its YPFB contract

Spain Is Split Over Esso, Shell Bids

MADRID—The rejection of bids by Shell and Jersey Standard to build petrochemical plants in Spain has brought an open split in the Spanish government over foreign investment.

The two companies' separate bids were turned down by the Spanish Ministry of Industry after the ministry had accepted the proposal of Dow Chemical Co. to build a plant.

All three firms were joined in their applications by Spanish partners, though in each case the foreign firm was to bear the major cost of investment.

The Shell bid called for a $55-million petrochemical plant, while Jersey Standard's was for a $26-million installation. Both have appealed the rejections, asking governmental review.

The Spanish Ministry of Commerce has broken through censorship to assail the rejection of the two bids in its semiofficial magazine.

"If Standard Oil and Shell wish to invest in Spain to develop the petrochemical industry, let them," it declared.

"Let's deal in fair play with the propositions filed by foreign groups," it continued. It asked the government "to follow the economic line of West Germany and France, which have thriving free economies to the benefit of their people."

Those countries, the article said, "have imposed no restrictions on local or foreign investment, to the obvious advantages of their economies."

The stand taken by the Ministry of Commerce clashes head-on with the position held by the Ministry of Industry.

In rejecting the two bids, the Industry Ministry said the local market would soon be "well stocked." An export market for Spanish petrochemicals seems doubtful, the ministry added.

More Pressure on German Prices

BONN—Stiffer competition and more price-cutting are expected in Germany's oil market now that local refining has been started by the Swiss and U.S.-owned "Frisia," latest of new entrants (PW—Jun.10'60, p38).

The company, Erdoelwerke Frisia AG, is controlled by Swiss cut-rate marketer Gottlieb Duttweiler, whose Migrol Oil Co. is the biggest single shareholder. The U.S. participant is American Independent Oil Co., which holds 10%, plus a 15-year contract to supply it with crude from the Neutral Zone.

Duttweiler, through Frisia, has long been announcing the aim of selling products in the German market at well below prevailing prices.

Frisia is now ready to follow through, having recently started operations at two-thirds of the eventual 30,000 b/d capacity of its new refinery at Emden, a German North Sea port.

Frisia will sell super-octane gasoline at 9.9¢ a gal. off current prices.

The company will produce only 96/98-octane gasoline, which it will sell in Germany at 50.7¢ a gal.—compared with the 60.6¢ now charged for branded super-octane gasoline by the major marketers.

Frisia's price for this gasoline is even lower—by 3.6¢—than that prevailing for branded standard gasoline.

The sharp cut lends weight to predictions of another general round of gasoline price cuts in Germany before the year is out.

Several reductions early this year had dropped the price for branded standard gasoline to 52¢, from 56¢, though it was later hiked by a tax increase to 54.3¢. Predictions for another cut soon are based mostly on the increasing competitive pressure from new entrants, such as Frisia, whose share of the market is growing.

Frisia also has an eye on the Dutch market, where it plans to build up a network of its own service stations.

So far, it has 40 Frisia stations in Germany, which it expects to increase to 60 by the end of the year. Up to now, they have been selling 93-octane gasoline supplied by Duttweiler's Swiss organization.

In Holland, Frisia is about to start building up a sales organization, and is already reported preparing to sell its German-produced gasoline at about 11% off current prices in the Dutch market.

Brazilians Ready to Drill

area to a Zone 1 drilling site near El Dorado.

The acreage is held by Andes Oil Co., as operator for Pure, Signal, and Sohio.

Another Bolivian wildcat about to be spudded will be the first drilled here by a Brazilian private company.

Uniao Brasil-Bolivia de Petroleo, owned by a Brazilian refiner, already has spent $2-million on preliminary exploration and camp building. It will drill its first wildcat at Charagua.

Kerr-McGee Oil Industries, which has been retained by Uniao to provide management and technical assistance, has shipped in a rig capable of reaching 9,800 ft. from its Argentine operations.

Uniao is one of the four Brazilian private groups that have now been granted concessions in Area B of the former Bolivia-Brazil treaty area north of the YPFB zone. While the other three have done some preliminary exploration, none has yet announced plans to drill.

Several other American companies are active in wildcat drilling in Bolivia.

Shell and California Standard, operating under a farmout agreement from Atlantic Refining and Drilexco, are drilling on the Santa Rosa anticline in the northern part of Zone 1.

Shell and California Standard are earning a 50% interest in the acreage by drilling six holes. Atlantic Refining, earlier this year, bought an 80% interest in the acreage from Drilexco, which retained 20%.

Shell and Socal also each have concessions of their own, which they have been exploring jointly.

Chaco Petroleum, a wholly owned subsidiary of Tennessee Gas Transmission Co., is drilling below 11,600 ft. in its fourth test on contract acreage it holds in the YPFB reserve zone. The test is the No. 2 Palo Marcado.

Chaco is operator for a group that includes TGT, Union Texas Natural Gas Corp., Lion Oil Co. division of Monsanto Chemical Co., and Murphy Corp.

In addition, Bolivian Oil Co., a Fish Engineering Corp. affiliate operating on YPFB contract acreage, is currently seeking its third producer at Madrejones, on a narrow strip along the Bolivia-Argentina border. It now has 600 b/d and 800 b/d wells.

What's New / AROUND THE WORLD

Communists Boost Oil Sales to Common Market

BELGIUM—Imports of Communist-bloc oil by Common Market countries increased 35% in the first five months of 1960, after a 70% increase in 1959, according to figures released at a Parliamentary Assembly of the six-nation group.

The imports, including crude and products, totaled 3,283,000 tons in the five-month period, compared with 5.8-million in the whole of 1959 and 3.4-million in 1958. The largest gain is still in Italy, where the monthly average for Jan.-May was 394,800 tons (up from a 1959 average of 230,712 tons), compared with 120,600 tons in West Germany, 100,000 in France, 37,400 in Belgium and Luxembourg, and 3,800 in Holland.

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IRAN—Sapphire Petroleums Ltd., Toronto, has lost the oil rights it was granted two years ago under a joint venture with National Iranian Oil Co. Its $350,000 cash deposit has now been forfeited due to failure to meet an extended deadline to start exploration. Ircan, a joint company set up with NIOC, will be liquidated in four months.

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NEUTRAL ZONE—Japan's Arabian Oil Co. last week announced an initial posting for its offshore Neutral Zone crude in line with current Persian Gulf prices.

Effective Oct. 20, it is $1.42 per bbl. for 26.0-26.9 gravity oil, with a 2¢ differential per degree of variation, f.o.b. Ras al-Khafji.

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EUROPE—Gulf Oil announced this week it will build a 30,000 b/d refinery in either Denmark or Sweden to help supply its north European markets in nine countries.

The plant will be engineered to refine "types of crude available to the European area"—and not for the exclusive use of any single type, Gulf said. The refinery will be Gulf's first in Europe, though it has a minor interest in an Esso plant in France.

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PHILIPPINES—Shell has awarded Bechtel International a turnkey contract to build its 25,000 b/d refinery at Tabangao, 70 mi. south of Manila. Philippine capital will have a 25% interest in the $24-million plant, which will go on stream in 1962.

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SPAIN—Four French oil companies will hold a 49% interest in their joint exploration venture with the Spanish government's INI on 4,788 sq.mi. of reserve acreage in northern Spain, mostly in Navarra and Aragon.

Under agreements formally published by the government last week, two new companies will be set up, with INI holding 15% in each. Two French government-controlled companies, SNPA and Rap, will hold 33% and will be the operators. The other 16% will be shared by two privately owned French firms, Repga and Petrorep.

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USSR—Soviet oil output in the first nine months totaled 109-million tons, a 14% gain over the same period last year, according to the Central Statistical Board in Moscow. Natural gas output was up 3%, to 33.5-billion cubic meters for the same period. Over-all industrial production climbed 10%, surpassing the target by 3%, the board said.

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VENEZUELA—Though September oil output dipped slightly, the nine-month average was up 3.9% from the same period last year. The official government figures, in 000 b/d:

Company*	Sept. '60	9-Mos. Avg. '60	9-Mos. Avg. '59
Creole	1,100.7	1,109.7	1,120.5
Shell	763.4	755.4	825.0
Mene Grande	376.6	400.4	360.2
Mobil	127.0	125.6	110.6
Sun	91.2	80.4	34.1
Richmond	81.2	65.1	51.2
Superior	65.7	37.2	16.4
Texaco	56.3	56.1	54.9
Sinclair	55.0	49.9	47.4
Phillips	53.8	55.5	21.0
San Jacinto	35.2	39.5	31.4
Atlantic	28.6	27.0	25.7
Signal	25.2	26.7	24.6
Mercedes	16.3	16.6	31.9
Caracas	9.4	9.2	0.1
Coro	8.1	8.4	0.1
Talon	1.1	1.1	1.3
Continental	0.3	0.1	—
Totals	2,895.1	2,863.9	2,756.4

**For joint ventures, total group production is listed under operator's name.*

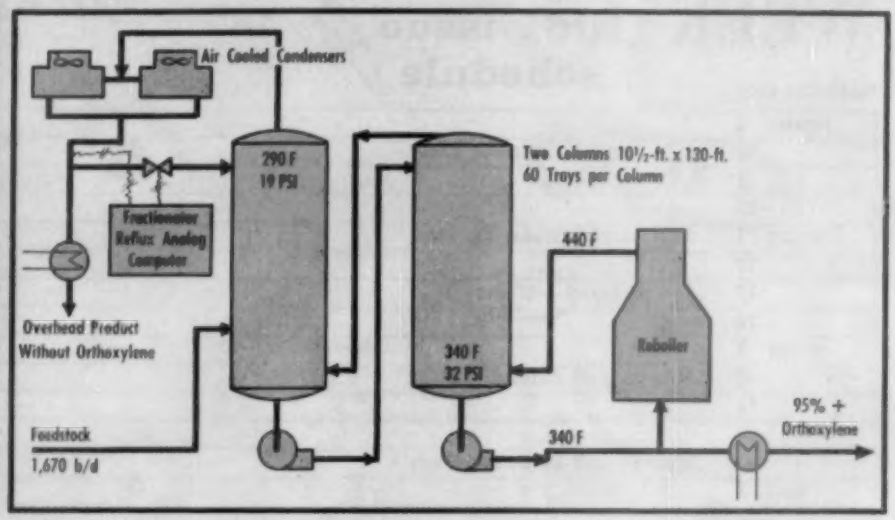
Mobil Buys 'Village' for Libya Desert

An entire village of these specially insulated buildings, designed to provide comfortable housing for oil crews even in temperatures of 110-120F, was shipped to Libya recently for use by Mobil Oil. The maker is Porta-Kamp Mfg. Co., Houston.

PETROLEUM WEEK 1961 issue schedule

for your sales plans file

Publication Date		ADVERTISING Closing Date	Cycle Number
January 6		12/16/60	3
13	Mills Shepard Readership Study	12/23/60	4
20		12/30/60	1
27		1/ 6/61	2
February 3	Mills Shepard Readership Study	1/13/61	3
10		1/20/61	4
17	Special Report — Offshore	1/27/61	1
24		2/ 3/61	2
March 3		2/10/61	3
10	Mills Shepard Readership Study	2/17/61	4
17		2/24/61	1
24		3/ 3/61	2
31	Mills Shepard Readership Study	3/10/61	3
April 7		3/17/61	4
14		3/24/61	1
21	Special Report — Pipelines	3/31/61	2
28		4/ 7/61	3
May 5	Special Report — Refining & Distributed at API Refining Meeting	4/14/61	4
12		4/21/61	1
19	Mills Shepard Readership Study	4/28/61	2
26		5/ 5/61	3
June 2		5/12/61	4
9	Mills Shepard Readership Study	5/19/61	1
16		5/26/61	2
23	Special Report — Production	6/ 2/61	3
30		6/ 9/61	4
July 7	Mills Shepard Readership Study	6/16/61	1
14		6/23/61	2
21		6/30/61	3
28		7/ 7/61	4
August 4	Special Report — Petrochemicals	7/14/61	1
11	Mills Shepard Readership Study	7/21/61	2
18		7/28/61	3
25		8/ 4/61	4
September 1	Mills Shepard Readership Study	8/11/61	1
8		8/18/61	2
15	Mills Shepard Readership Study	8/25/61	3
22	Special Report — Foreign Operations	9/ 1/61	4
29		9/ 8/61	1
October 6	Special Report — Drilling & Distributed at AAODC Meeting	9/15/61	2
13		9/22/61	3
20	Mills Shepard Readership Study	9/29/61	4
27		10/ 6/61	1
November 3		10/13/61	2
10	Special Report — Marketing & Distributed at API Annual Meeting	10/20/61	3
17	Special Report — Subject of timely interest & Distributed at API Annual Meeting	10/27/61	4
24		11/ 3/61	1
December 1	Mills Shepard Readership Study	11/10/61	2
8		11/17/61	3
15		11/24/61	4
22		12/ 1/61	1
29	Special Report — The Year Ahead	12/ 8/61	2



PURE ORTHOXYLENE is separated from mixed feedstock at Corpus Christi refinery of Delhi-Taylor Oil Corp. in this . . .

Processing Unit With Unique Features

The new unit for the manufacture of orthoxylene at the Corpus Christi plant of Delhi-Taylor Oil Corp. contains several unique features. One of these is its versatility.

This unit, built in a record six months, was designed to produce a variety of chemicals from different feedstocks, whenever this becomes economically desirable.

At present it is producing primarily a high-purity orthoxylene.

The demand for this material is currently very high: It is one of the raw materials from which phthalic anhydride is produced, and there is a great need for "phthalics" all over the world (PW—Sep.30'60,p39). They are used in the manufacture of polyester and vinyl plastics, alkyd resins, and paint pigments.

The unit consists of a two-column fractionator that separates 95%-pure orthoxylene from a mixture of xylenes and ethylbenzene.

The feedstock, at a rate of 1,670 b/d, comes from the refinery's Platformer and Udex combination unit. It is a mixture containing 22% of ethylbenzene, with most of the rest made up of the three xylenes (ortho, meta, and para) in various proportions. It also holds traces of C_9 aromatics.

Each of the two fractionation columns contains 60 "split-flow sieve trays." The columns are 130 ft. high.

In the orthoxylene operation, the heavy product collected at the foot of the first column is pumped into the top of the second column, where the fractionation process is continued. Conversely, the vapors rising to the top of that second tower are led to the foot of the first tower.

But, says Delhi-Taylor, when necessary, the two columns can be disconnected, and used to carry out two entirely separate fractionation processes.

It is expected that 85% of the orthoxylene in the mixture can be recovered by routine operation of the unit. This would average around 280 b/d.

Another unusual feature of the unit is the use of air-cooling for the overhead vapors of the first fractionation column.

These light fractions, at a temperature of about 290F, go from the top of the first column to two air-cooled condensers (at the right, in picture, above).

Air-cooling was selected to avoid the difficulties inherent to water-cooling—such as the need for extensive water treatment as a protection against corrosion, and the need for a cooling tower. It was found that the space required for these two air-coolers was only slightly greater than the space that would have been required for an adequate water-cooled exchanger.

The percentage of reflux to the fractionation tower is controlled automatically by an analog computer.

From the air-cooled condensers, a fraction of the overhead product is recycled into the same column. The balance, a mixture of metaxylene, paraxylene, and ethylbenzene, is recovered and used principally as a solvent.

Plastics Make New Parts from Old

Reinforced plastics, of petrochemical origin, are taking on rapidly increasing importance as structural materials in the fight against corrosion.

A great variety of applications of many plastics, such as polyesters, vinyls, and high-density polyolefins, were described at the recent meeting of the Society of Plastics Engineers, in San Francisco.

"Only a small fraction of the 6-billion lb. of plastics produced this year will be used for corrosion-resistant applications," said R. B. Seymour, professor at Sul Ross State College, Alpine, Tex. "Yet the performance of those that are used in accordance with the principles of the plastic industry will rival the best of the classical materials of construction."

The U.S. Navy, Seymour reported,

has specified that all its boats under 50 ft. in length are to be constructed from reinforced plastics. And the U.S. Coast Guard has reported that a 40-ft. reinforced plastic boat stood up well under test conditions twice as severe as those required to destroy its wooden counterpart.

Seymour estimates that plastic production in the U.S. will exceed 10-billion lb. by 1970.

One typical example of how a plastic can be used for the repair of a large piece of mechanical equipment: the economical rebuilding of centrifugal pumps deeply eroded by sand or other abrasives, or badly corroded by chemicals.

This new technique has been used in two cases in San Diego, Calif. It was described at the SPE meeting by I. Nusbaum, superintendent of the sewerage division of the City of San Diego, and S. E. Susman, of Narmco Industries, Inc.

In one case, bronze pump castings at San Diego Gas & Electric Co. have shown practically no sign of erosion after more than two years of service, since the plastic rebuilding was performed, Nusbaum said. "A bronze replacement part, under the same conditions, would have shown appreciable wear."

The second case involves the cast iron volute casings and front heads of 24-in. pumps at the San Diego sewage treatment plant.

"In some areas," the speaker said, "as much as 2 in. of iron had disappeared, and conventional replacement parts, costing approximately $5,000, could not be obtained in less than six months. In the meantime, however, the repair was effected in two weeks, at a cost estimated at $750."

The repair technique consists in the application of fiberglass mats and successive coatings of an epoxy resin putty with a curing agent.

The epoxy putty and the curing agent are supplied in separate preweighed packages; the contents of the two containers are mixed just prior to using.

The damaged parts were rebuilt to their original contour by applying several layers of fiberglass and epoxy, and allowing each layer to gel before the next layer was applied. An infrared lamp was used to hasten this hardening process. Finally, the rebuilt surface was sandpapered.

In addition to protecting the metal against corrosion, the plastic gives the pump a very smooth surface, which increases its efficiency substantially. The interior of the pump casings were coated with a fiberglass reinforced plastic for that purpose.

This type of repair has many possible applications in refineries and processing plants. Eventually, it may even be adopted as a routine maintenance procedure.

The process will be applied to several other areas around San Diego, it was indicated at the SPE meeting. For example, for the rebuilding and coating of a flume in contact with hydrogen sulfide of a concentration sufficient to corrode concrete.

It will also be applied to the repair of an oil cooler bypass fittings.

The fiberglass cloth and the unmixed epoxy and curing agent are stable, and can be kept indefinitely in stockrooms, ready for application on a moment's notice.

Similar repair jobs can be accomplished with other types of plastics, for example the new chlorinated polyether.

This plastic, manufactured by Hercules Powder Co. under the name of Penton, is a thermoplastic polymer with extremely high chemical inertness and good dimensional retention. It can be used when exposed to continuous temperatures up to 275F.

Better Engine, Not Better Fuel, Is Cure for Jet Takeoff Smoke

The smoke that is frequently produced when a jet plane takes off is not the fault of the fuel, recent research indicates.

A great deal of work has been done by both refiners and aircraft engine manufacturers to determine the type of jet fuel most suitable for commercial and military aircraft. Economic considerations, availability, safety, and cleanliness of combustion all enter into the picture (PW—Apr.1'60,p26).

Yet, regardless of the quality of the fuel used, a great number of aircraft generate a heavy and objectionable plume of smoke at takeoff.

This smoke problem, however, can be solved by redesigning the power plant of the jet aircraft, and several companies, both in the U.S. and abroad, are actively studying new designs to accomplish this.

The need for such redesign was brought out in a study of gas turbine combustion performance described last week in Los Angeles by A. H. Lefebvre and T. Durrant, of Rolls Royce, Ltd., Derby, England, during the national aeronautic meeting of the Society of Automotive Engineers.

"Although fuel type does affect various combustion parameters, in particular smoke," Lefebvre said, "its influence is small in comparison with what can be accomplished by attention to design."

Takeoff smoke is caused by water that is injected into the combustion air to augment the thrust of a jet engine. Most jet aircraft in operation today have plenty of power—plenty of thrust—once they have reached their cruising altitude. But they lack power to take off, under full load, especially on warm days.

To increase their takeoff thrust, a fine spray of cold water is injected into the air used for combustion. This reduces the air temperature and increases its density, so that more air can be introduced into the engine.

"In the JT3C Pratt & Whitney engine, which powers one of the first pure jet commercial aircraft," says Frank W. Kolk, assistant vice-president for research and development of American Air Lines, "water injection raises the thrust from 11,200 lb. to 13,500 lb. This is satisfactory for takeoff. An engine that would have a thrust sufficient for such an aircraft to take off without water injection would be unnecessarily large and heavy at cruising altitude."

"Water injection," Kolk says, "is a perfectly safe and satisfactory method of augmenting takeoff thrust, from a mechanical as well as an economic standpoint. But it does create smoke, and we are in the process of working out a solution."

"We get smoke with the best of jet fuels when using water injection," says Ed Droegemuller, project engineer of Pratt & Whitney Aircraft. "Yet in practice the most economical way to restore power on hot days is to use the injection of water."

A new method of combustion, with a modified distribution of fuel and air throughout the jet engine, may be a solution to the smoke problem, regardless of the fuel used, according to the Rolls Royce engineers.

The best cure for smoke, they reported at the SAE meeting, lies in the design of the flame-tube and the fuel injector. The fuel-air ratio in the first portion of the combustion zone should be maintained, as far as possible, at or near the stoichiometric

DOW

serving
PETROLEUM
across
the board

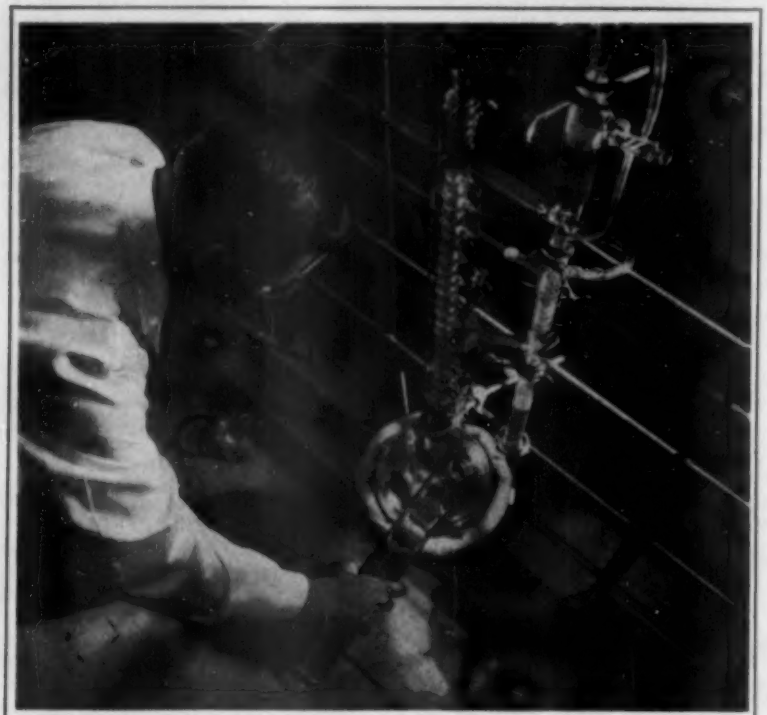
Dow is more than just a manufacturer of chemicals for the petroleum industry. Its diversified activities include basic research along many different lines, development of new chemicals, and assistance—both in the field and in the lab—to processors with problems. Dow's Petroleum and Gas Conditioning Laboratories often do basic research to help customers solve specific problems . . . then make the results of this research available to the entire industry. In this report, you'll see how Dow assistance and Dow chemicals are put to work.

LAB TRIO TAKES THE PROBLEMS OUT OF GAS PROCESSING

When Dow's Gas Conditioning Laboratory attacks a problem, they bring three big guns to bear on it.

One: long-experienced Dow chemical engineers whose business it is to trouble-shoot problems, right on the spot. Two: a staff of chemists with virtually unlimited laboratory facilities at hand. And three: a research program, designed to help solve problems common to the entire industry.

An example of the latter is Dow's recent research on activated charcoal. The study concerned an improved method of using this material to purify glycol and amine solutions in respect to hydrocarbon contamination, foaming and corrosion. Two major advantages which this method offers the petroleum industry are: resulting purity, in many cases comparable to vacuum distillation, and simplicity of operation.



Vacuum distillation of a hydrocarbon-contaminated glycol solution aids in the identification of the individual components of the system.

For purifying glycol solutions, particularly under heavy flow conditions, two adsorption columns permit maximum operating efficiency—as exhausted charcoal is replaced in one column, the alternate column is put into use. Regeneration of the filter beds is not difficult. An occasional backwash will flush out solid particles choking the bed, while live steam will quickly eliminate light hydrocarbon contaminants.

The detailed report on the project is available to the industry on request. Among other data, the report includes information on methods of determining charcoal bed exhaustion; the specific use and placement of filter units; differences in handling gravity feed and batch operations; and a discussion of physical principles involved in the adsorption process.

The work of Dow's Gas Conditioning Laboratory touches all areas of petroleum industry interests. For example, research on corrosion in gas processing equipment was begun for a Dow customer. The result was not only complete solution of the primary problem, but also thorough development of data on the corrosion-inhibiting activity of sodium vanadate—information which is available to any company involved in gas conditioning.

Another instance of Dow's industry-

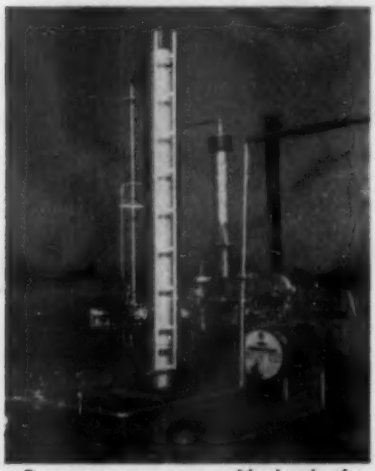
oriented approach to petroleum problems is the development of an improved method for analyzing certain components in natural gas. The method, as engineered by Dow, provides accurate results with advantages over conventional methods of speed, and simplicity of equipment—considerably less room than usual is required for the set-up. Best of all, analyses can be carried out economically by a competent technician.

These three projects are typical of Dow's wide coverage of the industry, and of the extent to which the Dow Gas Conditioning Laboratory becomes involved in customer problems. Detailed reports of the projects are available on request.

DOW GLYCOLS

. . . peerless extractors

The large family of glycols includes some of the most versatile of extractants to be found anywhere. They dehydrate gases in natural gas process-



Dow serves processors with glycols of highest quality and uniformity.

ing, prevent freezing of free water by injection into gathering systems, and recover aromatics from hydrocarbon feed stocks during refining operations.

Because Dow is basic in the manufacture of glycols—that is, Dow makes its own "starting point" chemicals—it can easily produce glycols of high purity and uniformity. This "basic" position as chemical producer gives refiners and gas producers definite advantages, some of which are: complete control of quality, from raw material to the finished compound; a wide range of chemicals to choose from; widespread production facilities; and fast delivery to any part of the country.

ETHANOLAMINES

. . . acidic affinity

The ethanolamines – monoethanolamine and diethanolamine – have a strong affinity for acid gases. Consequently they have great value for natural gas processors. An important use is the absorption of hydrogen sulfide and carbon dioxide from natural gas and process gas. As with other Dow chemicals, one mark of the Dow ethanolamines is their uniformity and purity.

The facilities of Dow's Gas Conditioning Laboratories are available to users of Dow gas processing chemicals, too. This means on-the-spot assistance by Dow Technical Service Representatives, when the problem requires it. Then there are the extensive files of gas conditioning case histories which Dow maintains . . . often a real short-cut in helping to solve gas scrubbing problems.

Refining and production, too . . .

DOWTHERM A . . .

heat's up—pressure's down

Dowtherm® A is Dow's double-duty organic heat transfer medium. Its high efficiency permits it to be used in either vapor phase or liquid phase. And it can also be used for *cooling*, if desired.

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value—that is the theoretical proportion of air and fuel for chemical reaction, without any excess of air or fuel.

"And even when finely atomized water is introduced into such a stoichiometric combustion zone," they added, "the level of exhaust smoke can be reduced to less than the dry value."

In the U.S. the problem is being attacked from a different angle: The thrust is being increased and kept more uniform regardless of temperature by an air bypass design.

Both Pratt & Whitney and General Electric Co. have recently developed a new type of pure jet engine, called turbofan, or bypass engine, which promises to show substantial advantages over the present jet engines. In these new jets, there is either a larger, or a supplementary, blower to supply extra air; and this air is bypassed, under pressure, into the jet discharge, around the combustion chamber.

These engines, Kolk says, have a much more even power delivery—at takeoff and while cruising. They are less affected by atmospheric temperature changes, and less sensitive to fuel type. They are also substantially more silent than the conventional pure jets. They are equipped to use water injection in case of extremely high atmospheric temperature at take-off, but it is not expected that they will normally need this augmentation.

One such engine, a Pratt & Whitney JT3D, is being currently tested in a Boeing 707 jet. American plans to convert all its pure jets to the turbofan design.

This type of engine—the Pratt & Whitney JT3D or the General Electric 805-23—will also be used shortly by United Air Lines and Western Air Lines in this country, and by Iberia, KLM, Ethiopian Airlines, Lufthansa, Qantas, and Swissair.

And the latest version of the Rolls-Royce bypass engine, the RD163, is also ready to be tested in Great Britain.

Either one of these solutions is more rational than to put costly limitations on jet fuel specifications, according to D. N. Harris, manager of the product application division, aviation department, of Shell Oil Co.

"Most engineers agree," Harris says, "that improvements in the chemical nature of the fuel contribute in only a limited way to smoke elimination if the cost of the fuel is to be kept within reason. And such improvement could impose great hardship on airlines and fuel supply companies from the point of view of world-wide availability."

VINYL POWDER, fusion-bonded to preheated perforated steel panels, shows how . . .

Fluidized-Bed Principle Spreads

There is a big future in store for fluidized bed coating, the new process in which plastic resin powders, kept in a fluid condition, are fused upon preheated metal parts.

This is of particular interest to manufacturers of electrical equipment—for example in the application of insulating coatings on wires. Several engineers of General Electric Co. discussed various phases of the new process, sometimes referred to as the "fusion bonding" process, at the recent annual meeting of the American Chemical Society, in New York. And an analysis of the technique was presented at that meeting by F. J. Nagel and D. S. Richart of Polymer Corp. Reading, Pa. Polymer is the U.S. licensor for the process, which was developed a few years ago in Germany by Knapsack-Griesheim A.G.

The "fusion bonding" process should open a substantial market for resins of petrochemical origin.

Over $1-million of various resins will be used this year for fluidized bed coatings, and Chemical Week, a McGraw-Hill publication, predicts that this market may well reach $50-million within ten years, based on its present rate of increase and its huge potential.

Six basic types of plastic fusion bond finishes are commercially available today. Five of them are of petrochemical origin. They are:

• **Vinyls.** They come in many variations from semirigid to highly flexible; some are rubber-like products, hard or soft. They have excellent electrical insulating properties, high weatherability, and salt-spray resistance.

• **Nylon.** It was difficult heretofore to use nylon for coatings, because it does not dissolve readily in most solvents. The fluidized bed coating process now makes available smooth, glossy nylon coatings, with high bearing and wear properties.

• **Chlorinated polyether.** This new plastic is now widely used to coat equipment for the chemical industry, on account of its high chemical resistance. It is adequate for continuous operation at temperatures up to 300F.

• **Epoxies.** Epoxy coatings have exceptionally good electrical insulating properties over a wide temperature range—up to 2,300 volts per mil of thickness in thin films, a little less for heavy films. General Electric engineers have concentrated their studies, they told the ACS meeting, on Shell's Epon 1,001 and 1,004, with various curing agents, mostly of the conventional phthalic types.

• **Polyethylene.** As with nylon, the use of polyethylene in sprayed coatings was difficult, because it won't dissolve in most solvents. But it makes an excellent fluidized bed coating, Polymer says. Only the higher-melt-index polyethylenes, however, can be

used; low-melt-index types degrade during application, because of the high temperature required to obtain a flowable product.

• **Cellulosic esters.** This type is widely used in lacquer form.

The rapid success of the new technique is due to its many advantages, both practical and economical, says Polymer, which cites these assets:

• A comparatively low initial capital investment is required.

• Coatings ranging in thickness from 5 to 50 mils can be applied in a single dip, without using any solvent.

• The coatings can be machined to close tolerances.

• A great uniformity in the coating characterizes the process.

• Smooth finishes can be obtained even over rough surfaces, with virtually no surface preparation.

• With the same equipment, a wide variety of colors or materials can be applied to parts of many different shapes and sizes.

• Less expensive substrates can be used. Often a high-grade alloy-steel part, Polymer says, can be replaced with an inexpensive casting protected with a fusion bond finish.

• The process lends itself well to automatic operation.

• The plastic powders have virtually an indefinite shelf life.

The process consists of six steps, and each step presents its own problems, the Polymer technicians explained. These steps are:

(1) Pretreatment of the metal.

(2) Application of a primer. To obtain better adhesion between the substrate and the coating, a primer is frequently used.

(3) Preheating of the metal. The temperature to which the metal is heated may vary from 500F to 750F, according to the nature of the metal, the shape of the part, and its thickness. The time required for preheating may vary from 5 to 20 minutes.

(4) Dip procedure. The parts to be coated, suitably suspended, are immersed in the fluidized resin for from 2 to 10 seconds (picture, above). The fluidity of the bed is maintained by blowing a stream of air or nitrogen through it. The manufacture of the finely powdered resin raises problems that vary with each material, in order to obtain adequate fineness, proper particle distribution, and complete "whirlability" of the powder in the gas current, a feature essential to uniform application.

(5) Postheat and curing. After having been dipped, the parts are subjected to a postheat temperature of 400F to 450F from 2 to 30 minutes.

(6) Cooling.

What's New / IN PROCESSING

An automatic olefin titrator that quickly measures the bromine number of gasoline has been developed by Standard Oil Co. (Ind.), and is being manufactured and distributed by Central Scientific Co., Chicago.

An upper limit to olefin concentration in gasolines used in Los Angeles County has been set on the assumption that there is a correlation between the olefin content of motor fuel and the smog-forming exhaust of vehicles (PW—May27'60,p40).

•

Magnetic rubber can be produced by adding fine particles of a polarized material to batches of unvulcanized natural or manufactured rubber, according to a recent report to the American Society of Mechanical Engineers by Robert J. Webster, of Denman Rubber Mfg. Co., Warren, Ohio.

The company is manufacturing magnetized rubber with a neoprene base; barium ferrite is the material being polarized. After the polarized particles are added to the batches, any conventional system can be used to vulcanize the mixture.

Like the poles in ceramic magnets, poles in magnetic rubber can be located in any desired position.

•

Titanium trichloride for use as a catalyst in production of polypropylene is being produced at a new Stauffer Chemical Co. plant in Weston, Mich. Capacity of the new facility is 500,000 lb. annually.

A new grade of titanium trichloride, produced at Weston from a process developed by Stauffer's research department, is highly reactive, making it useful for polypropylene production.

•

Firestone Tire & Rubber Co. is building a plant that will be able to make either a substitute for natural rubber or an extender which improves natural rubber, at Orange, Tex.

Production will switch from one synthetic to the other as demand requires.

Initially Firestone will produce Diene, a new polybutadiene synthetic, which improves the quality of blends with natural rubber.

The natural rubber substitute that will be produced at Orange is known as Coral. The plant will be completed in January, with capacity of 30,000 tons a year.

•

Esso Research & Engineering Co. has reformulated Essotex textile oil so that it can be removed more completely from finished fabric.

Over 90% of the Essotex can now be removed by standard scouring methods. This figure, Esso says, is high for textile oils.

Essotex replaces the natural oil in wool which is removed after shearing because it discolors fabric.

•

A Houdry catalytic unit for the production of 20,000 tons per year of butadiene was recently put on stream in Ravenna, Italy, by ANIC, the Italian State petroleum agency.

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Old Pipe Corrosion Safeguard Is Revived

- **Texas Eastern will use asbestos felt wrapping on a line it's now building in Pennsylvania.**
- **The wrapping proved out on company's "Inch" lines, built in early 1940s, but lost popularity during 1950.**

To solve one of the pipeline industry's biggest problems—corrosion—Texas Eastern Transmission Corp. has revived a technique from the past: use of an "outer wrap" of asbestos felt.

Asbestos felt was used as a wrap on the Big Inch and Little-Big Inch lines, which were built by the U.S. government in the early 1940s and sold to Texas Eastern in 1947.

But use of the asbestos wrap declined during the 1950s, when most pipeline contractors switched to a combination of coal tar enamel, reinforced with fiberglas and wrapped with heavy kraft paper.

Texas Eastern is putting the asbestos felt over conventional coal-tar-enamel coating on an 81-mi. line being built in Pennsylvania.

The 24-in. line will run from its Perulack compressor station to the Leidy and Tamarack gas storage pools, in the north-central part of the state. It will be completed later this year.

Recent studies by Texas Eastern of its "Inch" lines, which had been wrapped with the asbestos felt when they were built, reveal the effectiveness of the coating, the company says.

Asbestos felt has held up much better in all types of soils, it reports, particularly in rocky terrain, where it minimizes rock penetration, and also in soils that put a "heavy soil stress" on a line.

The company checked the durability of the felt by comparing sections of line wrapped with the asbestos to sections not so wrapped. "The pipe with the felt wrapping showed very few signs of corrosion," it says.

"Padding" the bottom of the ditch is another corrosion-control method being employed by Texas Eastern on the Pennsylvania line.

The padding, which consists of sand or dirt, either loose or in sacks, helps guard against rock penetration, according to Texas Eastern.

The combination of the asbestos wrap and ditch padding, the company reports, is made additionally effective by careful backfilling, which insures that soft dirt free of rock cushions the pipe.

The company is also using several other corrosion-saving techniques.

One is the use of high-temperature coal tar enamel of the low-temperature type. This enamel is specially formulated to prevent melting and sagging from high gas-compression temperatures.

Texas Eastern says the coating of main-line valves at the factory with a special plastic also helps considerably in preventing corrosion.

In addition, road casings are coated, carefully insulated from the pipeline, and the ends sealed, to prevent water and dirt from entering the casing.

The company has launched a program of stringent inspection to insure that all its corrosion-control safeguards are being properly applied.

Permanent corrosion test wires of lead are installed during construction to facilitate future corrosion-control testing.

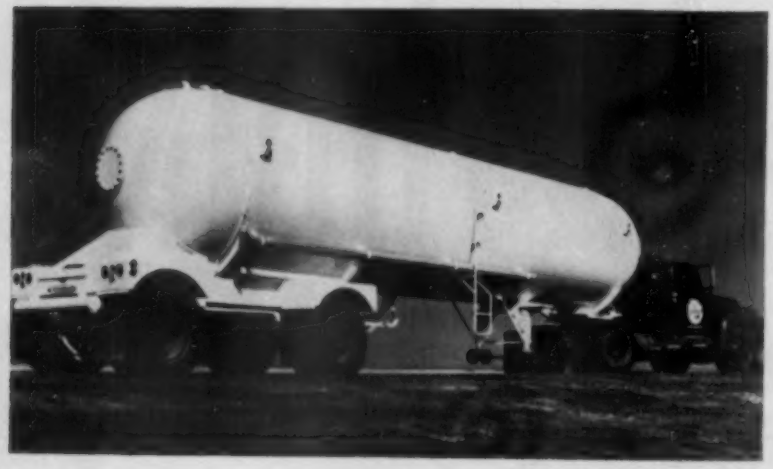
Test wires are installed at all key locations, such as road crossings, pipeline crossings of other companies, and fence lines.

Calibrated test sites are installed on each side of rivers, and also at approaches to compressor stations, plants, and storage fields. These are used to determine the direction and quantity of current flow on a pipeline. The regular sites are used for pipe-to-soil potential and resistivity studies.

By tracing the direction of current by means of the calibrated test sites, it can be determined whether or not the pipeline is being attacked by corrosion. If the line is discharging current, then it is subject to corrosion. If the pipe is receiving current, then it is not being corroded.

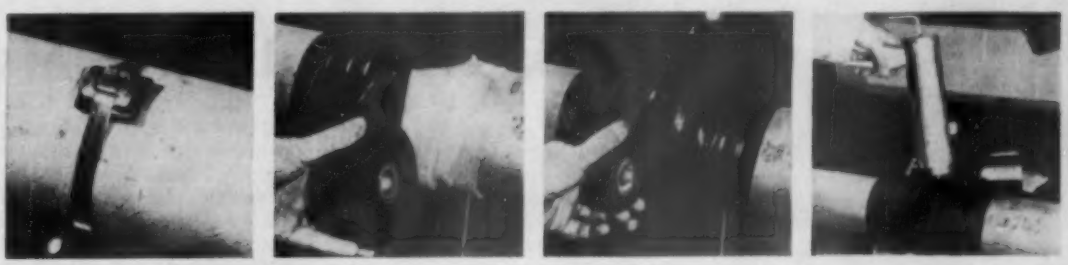
After the ground has settled on the Leidy line, the line will be surveyed with an above-ground "holiday detector" to search out possible flaws. Repairs will be made immediately.

Texas Eastern will then conduct an initial pipe-to-soil potential survey and soil-resistivity study. The results of the inspections will be used to determine the design of the cathodic protection facilities to be installed along the pipeline.



Another Giant Joins LPG Truck Fleet

This 50-ft. long LP-gas tank truck has just been completed by Delta Tank Mfg. Co. for Trailmobile, Inc. With a water capacity of 11,550 gal. and an LPG capacity of 10,048 gal., the truck is believed by Delta to be the largest ever built. Diameter of the tank is 90 in. and weight is 21,900 lb. It is made from 115,000-psi.-tensile T1 steel and has a working pressure of 250 psi.



Tape and Epoxy Used in Simple Pipe Repair Method

A method of repairing leaks in a pipeline with epoxy resin, which doesn't require decommissioning the line, has been devised by Minnesota Mining & Mfg. Co.

The technique was initially developed for gas pipelines, but it is suitable for products and crude lines as well. The pictures show the four steps.

First step is to clean the area around the leak thoroughly and cover the hole with a patch of Scotch electrical tape No. 22.

If the pressure in the line dislodges the patch, it can be secured with a steel band.

Next, screen-like "spacer" tape is wound around the pipe, and a plug is lashed to this with vinyl electrical tape. This layer of tape serves to form a mold for the resin.

A layer of cloth restricting tape is then wrapped around the vinyl tape for added strength.

To provide outlets for pressure that might build up in the spaces of the screen, vent holes should now be cut through both layers of tape.

Final step is the injection of the resin through the plug.

Hardening time of the thermosetting resin is 30 minutes, and curing time only two hours.

What's New / IN PIPELINES, TANKERS, STORAGE

Lone Star Gas Co. is considering building a 52-mi. pipeline, which would link two of its existing lines in Texas and boost capacity of its transmission system by over 100-million cf/d.

The $2-million line would run from the company's natural gasoline plant at Springtown, Parker County, to its plant at Gordon, Palo Pinto County.

At Springtown, the 18-in. line would tie in with Lone Star's line to Dallas County, and at Gordon it would connect with a line to a point near the intersection of Brown, Comanche, and Eastland counties.

•

Atlantic Refining Co. has developed a method of washing slag-forming impurities out of bunker fuel, which it says will save over $500,000 in cleaning costs over the life of a supertanker.

The higher temperatures and pressures at which today's big ships operate cause the accumulation of tough, insoluble deposits in the boilers, according to Atlantic.

The company says that on its Seaman class ships, whose boilers operate at 1,020F, the problem became so acute that it was necessary to reduce superheat temperature to 950F to reduce boiler-cleaning time.

The fuel washing system, which was designed chiefly to remove sodium salts, consists in straining the bunker fuel, and then adding a demulsifier and introducing hot water to dissolve the salts. The water and salts are then separated from the fuel in a centrifuge.

Atlantic tested the system for a year on its 30,000-ton Atlantic Seaman, and reported "little or no build-up of slag deposits" in the boilers.

•

Shell Tankers, Ltd., has scrapped 20 tankers—18 of them T-2s—because of obsolescence.

In a statement describing today's surplus tanker tonnage as "a grave problem," H. Wilkinson, Shell Tankers chairman, said, "Instead of hanging on to obsolete ships, shipowners should face up to the problem and scrap them."

Number of tankers now owned by and under charter to Shell total 551.

Republic Steel Corp. has licensed Hill Hubbell Co. to use its X-Tru-Coat to coat steel line pipe (PW—Nov.27 '59,p28).

Hill Hubbell, a division of National Malleable & Steel Castings Co., has four pipe-coating mills.

•

Engineering

A. O. Smith Corp. has installed equipment at its Milwaukee mill for internal coating of large-diameter pipe.

To date, most pipe has been made uncoated and has been coated internally by independent contractors at the plant site or in the field.

Reasons for instituting the new service, according to an A. O. Smith spokesman, are to insure quality control, to permit coating during bad weather by doing it indoors, and to minimize weathering effect on the bare pipe interior.

The Milwaukee mill is outfitted to coat pipe in diameters of from 16 in. to 30 in.

Type of coating applied is specified by the user.

How to Sell Gasoline at a Carnival—

Billups Eastern Petroleum Co. has turned dealer incentive, nonpetroleum sales, and a carnival atmosphere into an expanding combination in the southeastern gasoline market.

These successful ingredients have made an impressive story, which the company is currently telling to the nation's financial executives.

Early this month, H. H. Peyton, president, and W. H. Montjoy, secretary, spoke to security analysts of the Citizens & Southern Bank of Atlanta, along with several other Billups officers.

In July, Montjoy talked before the New York Society of Security Analysts in New York.

Both Montjoy and Peyton are board members of Billups Western Petroleum Corp., headquartered in Hammond, La., which uses similar merchandising tactics in a territory that extends farther west than Billups Eastern's.

Billups' management has pushed nonpetroleum products to the point where they now constitute more than 21% of total retail sales.

These sales make good sense, says Montjoy, especially during price wars. In effect, they provide a profit cushion when the going gets rough in gasoline.

Some major marketers would be horrified if they found their dealers pushing the items that are daily fare at Billups stations.

"We sold a quarter-million hula hoops during the hoop craze," says Peyton. "We sold hundreds of thousands of those birds that bob up and down when attached to a windshield with a suction cup."

Billups has tried selling watermelons, sugar cane, coon tails, panda bears, shrubs, and plants, looking—by trial and error—for something that will "catch the public fancy."

"Our best regular sellers are childrens' toys and wagons," says Peyton. "Cigarettes are a good steady seller, too—about 600,000 packs per month" (Billups has its own brand).

One station in Georgia, Peyton notes, has a full-time man who does nothing but sell cigarettes.

Incentive is the prime mover at Billups. For many employees, commission earnings are the only form of payment.

At each station, a special kitty is set up to pay the managers and attendants. Into this kitty goes 2¢ from every gallon of gasoline sold, 12% from the gross profit on accessories and novelties, and 9% on tires, batteries, and oil.

In a five-man station, only two men —the bottom men—get paid a salary. They receive $50 to $65 a week, which is paid out of the kitty.

The rest of the money is split 40% for the manager, 30% for the second man (who is usually the night manager), and 30% for the third in command (who usually works the daytime shift with the title of assistant manager).

These top three men are paid straight commission—no salary.

To keep the whole team from sitting down on the job, Billups has eliminated chairs. This is "one item you will never find in a Billups station," says Montjoy.

And, with few exceptions, Billups stations don't have doors. "We are open around the clock 365 days of the year."

Billups doesn't rely exclusively on incentive. The station opening has been engineered into a major promotional effort.

Here's how a typical Billups opening is handled:

- "To let the town know we're in business," Billups spends $2,500 on newspaper, radio, and TV advertising.
- A loud-speaker truck also is sent heralding the news of the opening. On opening day, the truck draws up to the station, filling the air with music and announcements.
- The station opens on Friday. And for two days, 25 men dressed in white coveralls (with "Billups Bargain Days" printed across their backs) operate the pumps. These men are pulled out of other Billups stations to beef up the opening-day staff.
- Even Peyton dons the coveralls along side of several supervisors and station managers. "Everybody works to pump gasoline, including myself," he says.
- A merry-go-round adds to the circus atmosphere created by balloons, pennants, clowns, spot lights, and cotton-candy giveaways.
- The price of gasoline is cut 5¢. (After the station is "opened" it will generally stick to a 2¢ differential below the majors.)

On opening days, a Billups station aims for 25,000 gal. and may gross $11,000 in TBA and nongasoline sales. "The best we've done for a two-day opening is 65,000 gal.," says Peyton.

He claims that it would take six months to build up such sales without a big opening. "A good opening means a good station," Montjoy said in New York.

The Billups merchandising tactics are designed to retain the impression of activity that is generated during the opening-day festivities.

The carnival and circus atmosphere

What's New / IN MARKETING

Willard W. Wright, senior vice-president for Sun Oil Co., called for an all-out selling job to stimulate demand for petroleum products.

Speaking before the New Hampshire Petroleum Industry Council in Manchester, N.H., Wright urged:

- Researchers to continue to find new uses for petroleum and develop more efficient consumption units.
- Marketers to find new customers in fields now using nonpetroleum products.
- The industry to promote courtesy on the highway, and to take the confusion out of highway signs, especially those on expressway cloverleafs.

"Let's get people to take to the highways again to see America," he said. "Let's get our children away from the TV sets and the crime picture books for a while and show them our national parks and shrines."

•

The National Congress of Petroleum Retailers was criticized last week

Billups Style

STATION OPENINGS AT BILLUPS feature balloons, low prices, and high gallonage.

EVERYDAY OPERATION includes pennants, signs, and a window full of TBA and toys.

pervades periodic sales of merchandise. Pennants fly alongside of plastic toy balloons and brightly colored beach balls. (These decorations later became profitable sale items.) "We believe that color attracts and we are constantly on the lookout for colorful items—not only for station openings but for every day also," says Montjoy.

TBA items, toys, and specialties are generally sold at least 10% under "standard prices." Billups has sold its own brand of tires during the past few years. "The first year of selling our own brand, our sales nearly doubled," Montjoy reports.

Billups sells several other items "almost at cost." But in this the company has a motive: Each of these items—toy oil trucks and lawn-cars, for example—have the Billups slogan on them: "Fill up with Billups."

The station buildings themselves are merchandising salesrooms. Glass extends across the entire face of the building.

Inside, stair-style displays are showered with bright lights and reflected with mirrors placed directly behind the shelves.

On both sides of the building, billboards advertise sales of accessories or seat covers. Other point-of-sales signs are placed at the curb. (After a station opening, Billups concentrates 99% of the station's advertising on such point-of-sales attention-getters.)

A continuing expansion program is furthering the company's penetration into southeastern markets.

Recently, Billups swapped over 90,000 shares of its stock for a 12-station chain headquartered in Georgia and operated under the name of Petroleum Distributors.

Earlier, Billups Eastern reported that its total of stations had grown to 148. In its annual report (for 12 months ending June 30), the company reported the addition of 20 new stations and the closing of three.

Most of the expansion activity during the fiscal year was concentrated in Florida. (The company's expansion extends as far north as Delaware.)

The bulk of Billups Eastern's supplies for these expanding retail operations is delivered by Delhi-Taylor Oil Corp., which recently acquired a substantial stock interest in the company (PW—Sep.2'60,p36).

Billups Eastern has a flexible contract with Delhi-Taylor stipulating that Billups will buy 80% of its requirements from the refiner at the present rate of demand (70-million gal. per year).

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for its stand on TBA divorcement and S-11 by W. P. Marquam, manager of trade relations for Pure Oil Co.

Speaking before a group of I.B.M. executives in a petroleum seminar, Marquam said it was hard to figure out why NCPR "should try to convince thinking dealers that complete TBA divorcement would be a healthy thing for them."

On S-11, Marquam criticized NCPR's stand on this so-called anti-good faith bill on two points:

- The bill "would cure none of the conditions of which NCPR complains."
- S-11, if passed, "will hurt the very dealers which NCPR is supposedly trying to help."

Marquam admitted, however, that much legislation now "bottled up in committee" resulted from the industry's "failure to develop and maintain good relations with the distributor, jobber, and particularly the dealer segments."

•

Service station dealers are losing ground in an expanding tire market. In the past 12 months, tire stores have overtaken service stations in their share of new tire sales.

Here's where the new tires were bought during the past 12 months:

	1959	1960
Service stations	33.4%	27.7%
Tire stores	30.8	33.7
Mail order/retail stores	16.5	20.2
Other	19.3	18.4

These shifts were brought out in the 24th annual National Automobile & Tire Survey, sponsored by Look magazine.

The survey also showed that service stations gained slightly on sales of retreads (29.5% to 30.% of the market), but tire stores gained much more (36.8% to 45.3%).

Over-all, the replacement tire market hit a three-year high during the past 12 months, at 67.1-million tires sold to private car owners. Further potential sales exist in the spare tire market. Look found that one car in 10 (or 4.7-million cars) carries no spare tire.

Total passenger-car tires on the road today total 231.8-million. Of these, 62% (or 143.1-million) are replacements. Thus, last year's 67.1-million sales represented 47% of all replacement tires in use.

JOHN H. JAMES has been elected president of Liberty Mfg. Co. of Texas, manufacturer of sucker rods and pumping units in Ft. Worth. He succeeds **W. A. E. Woods**, who has retired. James, who joined Liberty in 1951, was most recently secretary-treasurer. **W. R. Pardue** will succeed James in that office.

J. H. James

B. W. Wheeler

B. W. WHEELER has been appointed executive vice-president and general manager of McGaffey-Taylor Corp., subsidiary of Eastman Oil Well Survey Co. which manufactures and markets oil tools in southern and central California. Wheeler has been with McGaffey-Taylor for the past 14 years as part owner, vice-president, and field manager. Before that he was divisional manager of West Coast operations for Halliburton Co. McGaffey-Taylor maintains sales and service offices in Long Beach, Ventura, Bakersfield, and Avenal, Calif.

ALDEN P. TABER has been elected vice-president of Babcock & Wilcox Co., in charge of the research and development division. He will have his headquarters at the B&W research center in Alliance, Ohio, and will also maintain an office at the company's New York headquarters. Taber will be responsible for coordinating research and development among all B&W divisions and subsidiaries, and for developing R&D projects for the entire company. He joined the company last year as a member of the president's staff, coordinating and directing research and development activities. **Paul R. Grossman**, who will report to Taber, continues as director of the research center at Alliance.

U.S. INDUSTRIES, INC., has consolidated its Axelson division with its Garrett Oil Tools division, to form the Axelson-Garrett division, with headquarters in Longview, Tex. **Taylor Milton**, president of Garrett, will become president of Axelson-Garrett. USI says the consolidation will result in substantial efficiencies and improvements in manufacturing, sales, and service. Axelson presently has general offices in Los Angeles and St. Louis, and Garrett at Longview. The consolidation will call for relocation of certain operations in California and Texas. However, Axelson's St. Louis plant will continue in operation. Axelson manufactures bottom hole pumps, sucker rods, hydraulic pumping units, and related equipment. Garrett produces gas lift equipment, automation equipment for control between the well head and transmission systems, and pressure relief valves.

ERNEST E. BACCUS has joined Houston Oil Field Material Co. as a sales and service representative in East Texas, with headquarters in Tyler. Prior to joining Homco, Baccus held positions with Webster Drilling Co., in Tulsa, and D. H. Rowland, in Dallas.

JAMES DVORACEK has been named midwestern regional manager for Rockwell Mfg. Co.'s meter and valve division, with offices in Tulsa. Dvoracek, who has been with the company since 1956, was most recently assistant southwestern regional manager. Before joining Rockwell, he was sales manager of the Climax Controls division of Black, Sivalls & Bryson, Inc. **William F. Gulley** is the new assistant regional manager in the western region for Rockwell's meter and valve division, with offices in San Francisco, and **Nelson E. Davenport** succeeds him as San Francisco district manager for that division. Davenport was formerly assistant to Rockwell's vice-president of petroleum and industrial sales.

J. Dvoracek

T. L. Lewis

T. L. (Dick) LEWIS is special representative for Hunt Tool Co. in its Gulf Coast division. He will be responsible for the sales of Hunt-Cullum hardbanding products for tool joints and drill collars, and Hunt bits, stabilizers, and other manufactured products. Before joining Hunt's sales staff, Lewis was Gulf Coast sales manager for Process Engineering Co. He has also been vice-president in charge of pipe sales for Norvell-Wilder Supply Co.

CHESTER CHANDLER is field superintendent at a new cementing service station in Kingfisher, Okla., established by BJ Services, Inc., subsidiary of Borg-Warner Corp. He has been field supervisor for BJ at Chikasha, Okla.

JERRY CAHILL is the new district manager at Tyler, Tex., and **R. H. MALLET, JR.**, the new district manager at Winfield, Kan., for Welex, Inc. Mallet succeeds **T. J. Wall**, who is now marine assistant district manager at New Orleans. Cahill was formerly Ft. Worth sales engineer, and Mallet was division sales engineer at Wichita. **Ray Evans** transfers from Welex's research and engineering center in Houston to succeed Cahill at Ft. Worth. Other personnel assigned to new positions are: **Lyle Dean Stroup**, from Tyler logging operator to Shreveport engineer; **W. F. Nidiffer**, field engineer, from Shawnee to Pampa, Tex.; and **George E. Wright**, from Houston logging operator to Houston division engineer.

RAY L. SEWELL is the new Gulf Coast representative for Hunt Tool Co. He will represent the Hunt cutting and fishing tool service division in Louisiana and Mississippi, and will be involved in the sale and rental of stabilizers, combination bits, Hunt-Cullum hardbanding, and other manufactured products. Sewell served as fishing tool operator for another service company from 1956 to 1959, and since then has operated a rental tool business in New Iberia, La.

GEORGE KING has been named assistant plant manager for Tubular Lining Corp., with offices in Houston. He will supervise production operations. King is a graduate of the company's training course for college graduates. The company lines tubular goods with plastic to prevent corrosion and paraffin deposition in oilfield operations.

WILLIAM M. FREEMAN is the new sales manager of Chicago Bridge & Iron Co.'s New York district. For the past two years he has been manager of CB&I's process equipment sales group. Freeman, who has been with the company for the past 19 years, has also had experience in the company's engineering and field construction departments.

EDDIE W. HARVEY is Continental-Emsco Co.'s new industrial sales representative at New Orleans, and **Ralph Hayes** is a new industrial sales representative in Houston. Harvey was formerly special pipe representative, and Hayes was galvanizing sales representative. Both men joined the company last year.

MICHAEL E. CASSIDY has joined the sales staff of Atlas Pipe, Inc., at Corpus Christi. He was formerly in charge of South Texas sales for Mid-Continent Supply Co.

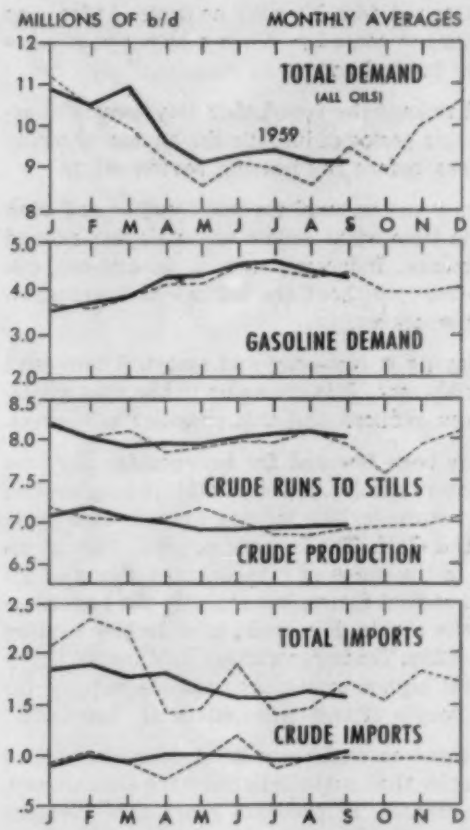
M. E. Cassidy

B. Klein

BERNIE KLEIN has joined Advertising Engineers, Inc., Tulsa, as senior vice-president and technical director. He will serve clients in the Tulsa, Dallas, Ft. Worth, and Houston areas.

PETROLEUM WEEK'S

Fingertip Figures



Figures for period ended Oct. 21, except as noted

TOTAL DEMAND

Latest 4-week average	9.071
Year ago	9.046

GASOLINE DEMAND

Latest 4-week average	4.188
Year ago	4.186

RUNS TO STILLS

Latest week	7.947
Previous week	7.898
Year ago	7.662

CRUDE PRODUCTION

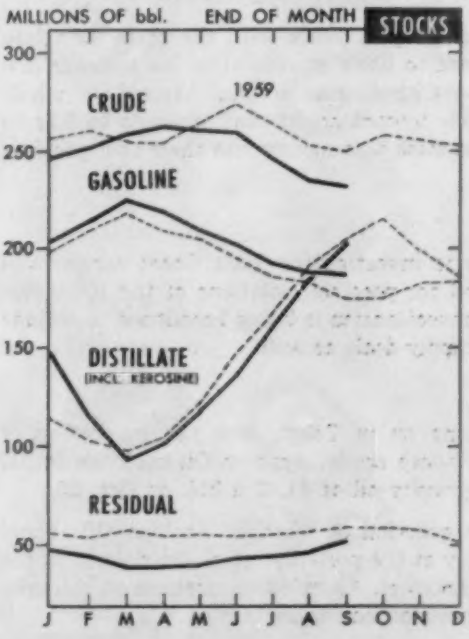
Latest week	6.771
Previous week	6.823
Year ago	6.875

TOTAL IMPORTS

Latest week	1.796
Previous week	1.609
Year ago	1.578

CRUDE IMPORTS

Latest week	1.172
Previous week	.956
Year ago	.999



CRUDE STOCKS

Week-ended Oct. 15	231.6
Previous week	230.0
Year ago	251.8

GASOLINE

Latest week	187.0
Previous week	188.2
Year ago	177.8

DISTILLATES

Latest week	214.4
Previous week	211.1
Year ago	214.6

RESIDUAL

Latest week	50.9
Previous week	51.4
Year ago	58.7

If the latest industry forecast proves correct, total demand for the fourth quarter of 1960 will increase 3.7% over the like period a year ago.

The forecast is by the Independent Petroleum Assn. of America (page 7) and represents a composite of predictions from a dozen of the nation's top oil economists.

Demand is expected to rise for all major products except residual—it will dip, but not much.

Here are IPAA demand forecasts for the major products during the fourth quarter of 1960 compared with 1959: gasoline, 4.1-million b/d, up 3.2%; kerosine, 452,000 b/d, up 15.9%; distillate, 2.2-million b/d, up 4.0%; residual, 1.6-million b/d, down 0.7%.

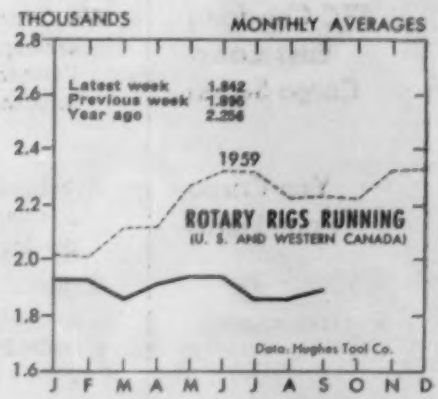
Total demand is estimated at 10,350,000 b/d, against 9,984,000 b/d for the same 1959 period. The forecast anticipates withdrawal of 586-million bbl. from inventories during the fourth quarter.

Domestic crude output will be up slightly from the third quarter of this year, but it is not expected to reach the level of the fourth quarter of 1959.

Domestic crude production for the final three months of 1960 is estimated at 7-million b/d, up 79,000 b/d over the average for the third quarter, but 29,000 b/d below the fourth quarter of 1959.

A particularly encouraging point in the forecast is the prediction that fourth-quarter refinery runs will decline from the 8,198,000 b/d average of the previous three-month period.

IPAA expects runs in October, November, and December to average 7,985,000 b/d—a helpful development for the industry if it is realized.



The Market Trend

The Glint That Turned To Flint

Buyers notice a flinty stare in refiners' eyes these days. It used to be that refiners along about now radiated sunshine and warmth to any stray buyer. The more warmth, the better the deal. Now it's no deals. At least no special deals. Discounts appear hard to come by. When a buyer names his product he has to have his money in his hand.

That "hard look" of sellers has kept the post-Labor Day buyers' market from developing, however. In this period of lull, it's the buyers who play it coy for about eight to ten weeks before the heating season starts.

A marketplace void of buyers is not unusual for mid-October and even late October. This is normally the time when sellers chase buyers around with all sorts of kindly inducements. Inducements like out-and-out discounts. It frequently is trick-or-treat (without the tricks) on transportation or storage arrangements, or whatever.

This year the sellers are playing it coy—coy and smart. There isn't even any "whatever" and no special treat. This shows up in the spot wholesale market as clearly as between refiners and their reseller customers.

Favors to refiner-buyers have been few and far between for the past several months. That refiner's inquiry for No. 2 fuel is still kicking around since late June or early July, for example. The inquiry first showed up in the Midwest, more recently at the Gulf. The buyer's original idea of an inter-refinery summer price was in the range of 0.5¢ discount. Some of his requirement may have been filled at that figure, but recently the buyer has shown a tendency to raise his price sights. His latest offer to buy heating oil was at a discount of 0.375¢ to 0.25¢. Trade reports say he'd better hurry and buy, or he'll be stuck for still higher prices. Against his inquiry for 500,000 bbl. are no more than a couple of two-cargo offers at "low Gulf."

Refiners have been just as hard on their own good, long-established resellers. They insisted, for example, that customers meet the Oct. 10 payment deadline on summer-fill purchases. In previous years this payment date had a habit of stretching out to Nov. 1 or even Nov. 15.

Suppliers aren't as lenient as in past years with the price on a late shipment of heating oil. They used to blink at removing the summer discount on a late delivery if it meant keeping an account happy. The whole thing sums up to a firmer attitude toward credit that amounts to 0.1¢ to 0.15¢ a gal. Refiners are trying to stick this money into their own pockets.

FTC Checking East Coast Cargo Sales:

The Federal Trade Commission is investigating East Coast cargo sales arrangements on heavy fuel oil for possible violations of the Robinson-Patman Act. Reports say the investigation is being broadened to include tank car and transport truck supply deals as well.

Yen Crude Price Fight:

A behind-the-scenes fight is going on in Tokyo over the marketing of Arabian Oil's Neutral Zone offshore crude. Arabian Oil made an initial posting of its Khafji 26-26.9-gravity oil at $1.42 a bbl. on Oct. 20.

Argument in Japan is over the question of whether Arabian Oil should market its yen oil in the country at the posted price or discount it on the same general basis as other marketers. An inflexible position on the company's part might jeopardize current loan talks in New York.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of October 24

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U.S. Gulf Coast, cargoes
- Gasoline, 98 oct prem....12.25-13.25
- Gasoline, 92 oct reg....11.25-11.5
- Kerosine....9-10
- Heating oil, No. 2....8.25-9
- Gas oil, 48-52, d.i....8.5-8.875
- Fuel oil, bunker "C"....$2.30

Caribbean, cargoes
- Avgas, Grade 100/130....14.75
- Gasoline, 93 oct research prem....11
- Gasoline, 87 oct research reg....10.125
- Gasoline, 80 oct research....9.375
- Gasoline, 70-72 oct motor method....9.25
- Kerosine....9.25
- Heating oil, No. 2....8.125
- Gas oil, 48-52 d.i....8.375
- Fuel oil, bunker "C"....$2.00

New York Harbor, barges
- Kerosine....10.1-10.35
- Heating oil, No. 2....9.1-9.35
- Fuel oil, No. 6....$2.62

Okla.-Group 3, northern shpt., bulk
- Gasoline, 91 oct reg....12.5-13.25
- Kerosine....10.5-10.625
- Heating oil, No. 2....9-9.25
- Fuel oil, No. 6....$1.80-1.90

Chicago, bulk
- Gasoline, 92 oct reg....12.625
- Heating oil, No. 2....9.5-11.35
- Fuel oil, No. 6 high sulfur....7.65

Los Angeles, rack
- **Gasoline, 88 oct reg....11↓-12.65**
- Diesel fuel, PS 200....7.75-11.25
- Light fuel, PS 300....$2.90
- Heavy fuel, PS 400....$2.05-2.45

Natural Gasoline, Grade 26-70
- FOB Group 3....4.5
- FOB Breckenridge, Tex....4

LP-Gas
- Propane, Oklahoma (Group 3)....4.5-5
- Propane, Baton Rouge....5.625

Pennsylvania Lubes
- Bright stock, 25 p.t....25
- 200 vis. neutral, 25 p.t....28

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i....26-27
- Neutral, solvent, 200-210 vis....23-24

Gulf Coast Lubes
- Bright stock, solvent, 95 v.i....26
- Neutral, solvent, 200 vis....23

Eastern Hemisphere

Singapore (Pulau Bukom) cargoes
- Avgas, grade 100/130....15.5
- Gasoline, 79 oct research....9.125
- Kerosine....9.625
- Gas oil, 48 d.i. minimum....8.75

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, (Okla.-Kan.), 36.0-36.9....$2.69-2.97
- North Dakota, 36.0-36.9....2.47-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9....3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9....2.92-3.22
  - West Texas, sweet, 36.0-36.9....3.00
  - West Texas, N.M., inter., 36.0-36.9....2.93
  - West Texas, N.M., sour, 32.0-32.9....2.71
  - East Texas, flat....3.05-3.25
  - Mirando, 28.0-28.9....2.96-3.31
- Illinois Basin, flat....3.00-3.05
- Pennsylvania Grade, Bradford dist., flat....4.80
- California, Signal Hill, 21.0-21.9....2.33†
- North Louisiana-Arkansas, 36.0-36.9....2.72-3.02
- Wyoming, sweet, 36.0-36.9....2.85-2.90
- Wyoming, sour, 32.0-32.9....2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.)....$2.38
- Leduc-Woodbend (Alta.)....2.53
- Redwater (Alta.)....2.42
- Steelman A (Sask.)....2.44
- Virden (Man.)....2.30

Venezuela (Cargoes, FOB lifting port designated)
- San Joaquin, 41.0-41.9, Puerto la Cruz....$3.10
- Oficina, 35.0-35.9, Puerto la Cruz....2.80
- Tia Juana, Medium, 26.0-26.9, Amuay....2.30
- Bachaquero, flat, La Salina....1.85
- Lagomar, 31-31.9, Cardon....2.55
- Lagunillas Heavy, flat, La Salina....2.07

†Differential per deg. of grav. varies

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura....$1.80
- Safaniya, 27.0-27.9, Ras Tanura....1.47
- Iran, 34.0-34.9, Bandar Mashur....1.78
- Iran, 34.0-34.9, Abadan....1.73
- Iraq, 35.0-35.9, Fao....1.72
- Kuwait, 31.0-31.9, Mina-al-Ahmadi....1.59
- Qatar, 41.0-41.9, Umm Said....1.95
- N. Zone, Burghan, 23.5-24.4, Mina Saud....1.48
- N. Zone, Ratawi, 23.5-24.4, Mina Saud....1.41
- N. Zone, Eocene, 16.5-17.4, Mina Saud....1.28

Middle East, Eastern Mediterranean
- Arabia, 34.0-34.9, Sidon....$2.17
- Iraq, 36.0-36.9, Tripoli, Banias....2.21

North Africa, Phillipeville, Algeria
- Hassi Messaoud, 48 and above....Withdrawn

KEY TANKER RATES

(Last paid, per long ton, single voyage)

U.S. Gulf-New York, clean....(USMC—5%) $2.71
U.S. Gulf-New York, dirty..(USMC—15%) $2.42↓
NWI-USNH, dirty....(USMC—50%) $1.38
NWI-UK/Cont., dirty....(Scale—55%) 14/9*↑
Persian Gulf-UK/Cont., dirty (Scale—40%) 35/7*↑
Persian Gulf-USNH, dirty....(USMC—65%) $4.45

**Sterling*

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Hubbard 7-7160

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520 N. Michigan Avenue
Mohawk 4-5800

Cleveland 15 — Marcus A. Loy, Jr.
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55 Public Square
Superior 1-7000

Dallas 1 — James R. Pierce
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2100 Commerce Street
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2 Place du Port

G. Simpson

W. L. Perryman, Jr.

W. LEWIS PERRYMAN, JR. has been elected president of General American Oil Co., of Texas, Dallas, succeeding **GORDON SIMPSON** who is retiring. Simpson, who is a past president of the Independent Petroleum Assn. of America, will enter private law practice in Dallas, and will also continue as a GA director. Perryman, who is 37 years old, joined the company as an attorney in 1949. He has been executive vice-president and general counsel since 1957. **W. P. Barnes,** who has been a GA vice-president since 1955, succeeds Perryman as executive vice-president. **A. H. Meadows,** board chairman, also assumes the chairmanship of the executive committee, succeeding **D. V. Loflin,** who is retiring. Meadows held Loflin's position before becoming board chairman in 1957. **F. H. Connally** and **L. P. O'Neill** have been elected senior vice-presidents. Connally, who will continue as treasurer, has been a vice-president since 1955, and O'Neill was named production and engineering vice-president the same year. The executive committee will be composed of Meadows, Perryman, Barnes, Connally and O'Neill. Barnes, O'Neill, and **Paul A. Conley,** vice-president of Blyth & Co., New York investment bankers, were elected directors. Four assistant vice-presidents promoted to vice-presidents are: **N. W. Krouskop** for production; **J. M. Haas** for engineering; **George Rhodus** for administration; and **J. W. Goss** for land. At the same time, **C. R. Lammers** was named assistant secretary. **R. M. Swesnick,** vice-president for foreign operations, has been elected president of two subsidiaries, General American Oils, Ltd., which operates in Canada, and GAO of Spain, Inc., which operates in Spain and the Spanish Sahara.

FREDERICO G. BAPTISTA, production department manager of Creole Petroleum Corp., has been elected to its board of directors. Baptista, who is a Venezuelan, studied at Texas A & M and the Massachusetts Institute of Technology. He has been with Creole since 1936.

LAURENCE C. BERGQUIST has been named executive vice-president and general manager, in London, for Iricon Agency, Ltd., succeeding **Arthur H. Elliot,** who is retiring. Iricon acts as agent for eight American oil companies in matters relating to the Iranian Consortium, in which they hold a 5% interest. Bergquist also becomes a director of Iranian Oil Participants, Ltd., and Iranian Oil Services, Ltd., in London. He has been with the agency since 1956, and before that was associated with Standard-Vacuum Oil Co.

NEW OFFICERS of the Southwest Louisiana Geophysical Society, Lafayette, La., are: **Glynn Schuchardt,** president; **Bill Flowers,** first vice-president; **Charles B. Vidrine,** second vice-president; **John Murphy,** secretary; and **Glen Hunter,** treasurer.

WILLIAM H. ABINGTON, Ft. Worth attorney, was named general counsel for the Texas Mid-Continent Oil & Gas Assn., at its San Antonio meeting last week. He succeeds **Andrew M. Howsley,** who resigned.

ERIC B. HJERPE is the new director of the chemical processing division at Gulf Oil Corp.'s Port Arthur (Tex.) refinery. He succeeds **William S. Bonnell,** who has been transferred to Gulf's Philadelphia refinery as manager of operations. Hjerpe was formerly director of the operations planning and scheduling division at Port Arthur.

JAMES E. LOW, Amerada Petroleum Corp., Tulsa, has been elected chairman of the New Mexico Petroleum Industries Committee for 1960-61. He succeeds **R. T. Holmes,** Humble Oil & Refining Co., Albuquerque, N.M. **S. J. McKim,** Gulf Oil Corp., Albuquerque, and **Ross Madole,** Mobil Oil Co., Dallas, are new vice-chairmen of the committee.

CHARLES J. RELLER, treasurer of Atlantic Refining Co., Philadelphia, has also been elected secretary. He succeeds **Richard Rollins,** who is retiring. Reller, who has been with Atlantic since 1926, became assistant treasurer in 1937, and was elected treasurer in 1955.

C. J. Reller

A. B. Clarke

ALEXANDER B. CLARKE moves up from manager of the manufacturing department to vice-president of manufacturing for Standard Oil Co. (Ohio), in Cleveland. Clarke, who joined the company in 1941 as engineer in the technical service division of the manufacturing department, became assistant to the technical manager in 1948. He was transferred to the sales department as chief of the technical division in 1952. In 1957 he became manager of the Akron (Ohio) sales division, and in 1959 he returned to the manufacturing department in Cleveland as manager.

MASON L. HILL, Richfield Oil Corp., Los Angeles, and **HAROLD T. MORLEY,** Pan American Petroleum Corp., Tulsa, have been nominated for president of the American Assn. of Petroleum Geologists. Other nominees for 1961 offices are: **J. Ben Carsey,** Humble Oil & Refining Co., Houston, **Ralph W. Edie,** consultant, Calgary, and **William J. Hilseweck,** consultant, Dallas, for vice-president; **George V Cohee,** United States Geological Survey, Washington, D.C., for secretary-treasurer; and **Grover E. Murray,** Louisiana State University, Baton Rouge, for editor. Balloting will be by mail, and the new officers will be installed in April, 1961, at the AAPG meeting at Denver.

CHARLES M. CUTBIRTH has been appointed plant manager of the Amarillo (Tex.) refinery of Texaco Inc. He succeeds **John R. Cutler,** who has been promoted to supervisor of the refining department's expense control division, at Houston. Cutbirth was formerly plant manager of the Texaco refinery at Santiago de Cuba. Cutbirth, whose first assignment for Texaco was at its Port Arthur refinery in 1929, became assistant superintendent of the Vengref refinery at Puerto La Cruz, Venezuela. He was promoted to superintendent there in 1951, and served in that capacity until he was named head of the Santiago de Cuba refinery in 1955.

LEONARD L. AITKEN, Denver independent, was elected president of the Rocky Mountain Oil & Gas Assn. last week. He succeeds **Frank H. Gower,** also of Denver. Aitken was at one time assistant general manager of Continental Oil Co.'s Rocky Mountain region, and later executive vice-president of Utah Southern Oil Co. He left Utah Southern earlier this year to open his own Denver office.

L. L. Aitken

J. B. Eckert

J. BYRON ECKERT succeeds **Arthur G. Reed** as Mobil International Oil Co.'s regional executive for North Africa, France, and Spain, with headquarters in New York. Reed is retiring after 34 years with the Mobil organization. Eckert, who has been with Mobil since 1948, became general manager of the company's affiliate in Syria in 1954. When the United Arab Republic was formed in 1958, Eckert was named general manager of Mobil affiliates in Syria and Egypt. He moved to New York earlier this year as regional executive for marketing and manufacturing in the Middle East.

DR. K. A. SMITH is manager of Sinclair Oil Corp.'s new electronics department, formed to coordinate the expanding electronic data processing and computing activities of its operating subsidiaries. The department will integrate individual electronic operations to serve over-all corporate needs at minimum cost. Smith has served in research and managerial positions with Sinclair Research Laboratories, Inc., in Harvey, Ill. He was most recently director of the economic analysis division. **A. J. Piemonte** is coordinator of data processing in the new department. He has been data processing coordinator in the comptroller's department.

H. F. Nabors

W. O. Ham, Jr.

W. O. HAM, JR., and **H. F. NABORS** have been elected vice-presidents of Continental Oil Co. Ham was named general manager of Conoco's domestic exploration department, at Houston, last month, and Nabors became production manager of the foreign exploration and production department, in New York, this spring.

GUS ATHANAS moves to Calgary as superintendent in charge of production operations for Pan American Petroleum Corp.'s new Calgary exploration and production district. **J. D. Burns** succeeds Athanas as Pembina area superintendent. Pan Am has also formed a new Edmonton exploration and production district, and a Whitecourt (Alta.) production area. **E. R. Wagner** is the Whitecourt area superintendent. **G. J. Last** has been named district engineer for the Calgary producing operations. **A. S. Anderson** is the Edmonton production district clerk, and **F. W. Just** is the Calgary production district clerk. **G. E. Goss** has been named Edmonton area clerk.

JAMES C. STORM has been elected president of Tidelands Drilling Co., subsidiary of Diversa, Inc., with headquarters in New Orleans. He was formerly executive vice-president of the parent company in Dallas. Storm also served with the former Magnolia Petroleum Co., and was a founder of Glasscock Drilling Co.

DON S. WILLHELM is chief engineer for Trans-Southern Pipeline Corp., Houston, newly created subsidiary of Transcontinental Gas Pipe Line Corp. Willhelm has been a member of the Transco engineering staff since 1950. Prior to his new appointment, he was senior engineer in charge of special projects involving the operating departments.

HARRY H. LAWSON is president of Universal Production Service, Inc., Midland, Tex., recently formed to drill, test, complete, and produce oil and gas wells on a custom contract basis, and to prepare and file all necessary reports resulting from its service to regulatory bodies. Other officers of the new company are: **Lamar Eschberger,** executive vice-president; **Everett L. Smith,** secretary-treasurer; and **Archie P. Parr,** field superintendent. Lawson was formerly associated with Roxana Petroleum Corp. and Seaboard Oil Co. Eschberger, Smith, and Parr have been with the West Texas Oil Reports & Engineering Service, in Midland. This company has been absorbed by Universal Products.

PERMIAN BASIN PIPE LINE CO. has a new executive staff at Midland, Tex., to carry out a program to decentralize natural gas gathering and transmission activities of Permian's parent, Northern Natural Gas Co. and its affiliates. **R. E. Mayne** is technical coordinator on the staff; **J. R. Lindsley** is administrative coordinator; and **R. L. Reagan** is personnel administrator. Mayne has been on the staff of the Midland headquarters office since it was opened last year as the first step in decentralization. Before that, Permian's headquarters were in Omaha, Neb. Lindsley and Reagan come from the staff of Northern's general offices in Omaha. At the same time, **Otto Barbee** goes to Great Bend, Kan., as area manager for Northern. He was formerly manager of plants for Permian, at Midland. **Roy Schollenbarger,** formerly Permian's manager of pipelines at Midland, moves to Hugoton, Kan., as superintendent of the integrated operations for the Liberal (Kan.) area.

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The Legion Proves Its Mettle

IN A WAY, the American Legion's cancellation last week of its endorsement of the proposal for a so-called national fuels policy study represents a well-deserved rebuke for the coal industry—and a feather in the caps of the oilmen who challenged it.

It takes a lot of guts for a national organization the size of the Legion to reverse itself publicly and to admit, in effect, that it had been taken in. The Legion's Executive Committee, which had approved the original resolution, did just that however, and so it merits a round of applause for its courage and statesmanship.

We were quick to jump on the Legion—and the oil industry too—last summer, when the ex-soldiers voted to support the proposal that the coal people have been trying to maneuver through Congress. We asked, rather acidly, whether the Legion had unwittingly allowed itself to become a patsy for a political coup by one of its buddies, a registered coal lobbyist. And we wondered aloud whether oil's watchdogs had been on their toes, for this resolution packed power and prestige in congressional circles.

Now that the issue has been resolved so satisfactorily, we are happy to voice our commendations for both groups.

DURING THE SUMMER MONTHS, many oilmen protested vigorously to the state Legion departments of which they were members. And, it is known, Legion heads weren't happy with the way the coal people capitalized on the Legion's reputation by inserting the May resolution in the Congressional Record, and braying about it in newspaper advertisements and promotional materials.

The suspicion that they had had the wool pulled over their eyes, under the guise of national defense and internal security, took hold. At the national convention last week, the Executive Committee jettisoned its endorsement by accepting the recommendation of its National Security Commission that the proposed energy study "is not germane . . . to its program."

This was good news. The next step should be for the oil industry to have this rescinder put in the Congressional Record, too—not with the intent of bragging, but merely to correct this important journal.

THE COAL INDUSTRY reportedly is increasing its budget considerably for next year's campaign to push this energy study through Congress, if possible. But if the chinks are plugged as quickly and effectively as this one was, and other efforts are nipped in the bud, the coal resolution will get nowhere, no matter how much is spent nurturing it.

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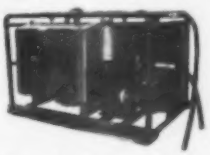

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